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Cette recherche constitue la troisième étape d'une étude longitudinale qui vise l'évaluation du rendement scolaire et des caractéristiques affectives d'élèves provenant de milieux défavorisés (élèves SED) qui fréquentent des écoles de la CEPGM ayant une population hétérogène du point de vue socio-économique. L'étude a été menée en 1996 et en 1997. Des tests de rendement en anglais et en mathématiques et un inventaire de motivation et d'image de soi ont été administrés à tous les élèves. Les résultats de cette étude soutiennent ceux des étapes précédentes et ils nous amènent à conclure que l'intensité du milieu dans les écoles de la CEPGM qui sont hétérogènes du point de vue socio-économique n'est pas suffisante pour hausser le rendement scolaire des élèves SED dans ces écoles au-dessus de celui des élèves SED dans les écoles de milieux défavorisés.

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Assessment of the Academic Achievement and Affective
Characteristics of Pupils from Socio-Economically
Disadvantaged Backgrounds in Non-Inner City Schools

PHASE III

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Assessment of the Academic Achievement and Affective
Characteristics of Pupils from Socio-Economically
Disadvantaged Backgrounds in Non-Inner City Schools
Grades 3 and 8

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Résumé

Cette recherche constitue la troisième étape d'une étude longitudinale qui vise l'évaluation du rendement scolaire et des caractéristiques affectives d'élèves provenant de milieux défavorisés (élèves 100) qui fréquentent des écoles de la C.S.D. 55 M. ayant une population hétérogène du point de vue socio-économique. L'étude a été menée en 10^{ème} année et en 12^{ème} année. À chaque niveau on a comparé les élèves 100 des écoles de milieu socio-économique hétérogène (groupe 100₁) à (1) des élèves 100 qui fréquentent des écoles de milieux défavorisés du type Inner City (groupe 100₂) et du type Core Inner City (groupe 100₃) et (2) des élèves 900-100 qui étudiaient dans les mêmes classes que les élèves 100. On a aussi comparé les résultats des évaluations d'année à ceux de l'année 1985 quand ces mêmes élèves étaient en 10^{ème} et en 12^{ème} année. De plus, on a inclus au niveau de la 12^{ème} année les quatre écoles de la Commission Scolaire Lakeshore qui avaient participé à l'évaluation des élèves de 10^{ème} année l'année précédente.

Des tests de rendement en anglais et en mathématiques et un inventaire de motivation et d'image de soi ont été administrés à tous les élèves.

Les résultats de la 5ème année indiquent que: (1) le groupe SED₁ a obtenu des résultats nettement inférieurs à ceux du groupe SED₂ à quatre tests d'anglais; (2) le groupe SED₁ a aussi obtenu des résultats nettement inférieurs à ceux du groupe NON-SED correspondant à tous les tests d'anglais sauf au test de compréhension; (3) il n'y avait pas d'autres différences significatives entre le groupe SED₁ et les autres groupes; (4) les résultats des trois groupes SED au test d'orthographe se sont nettement améliorés par comparaison aux résultats de 1985, tandis qu'il y avait eu de l'usage de 1987, les résultats de ces mêmes groupes ont nettement diminué; (5) les différences qui existaient déjà en 1985 entre les résultats du groupe SED₁ et ceux du groupe NON-SED₁ ont restées constantes jusqu'en 1987; (6) dans les écoles de la Commission Scolaire du Lakeshore, il n'y avait aucune différence significative entre le groupe "D" et le groupe NON-SED.

Les résultats de la 6ème année indiquent que: (1) il n'y avait aucune différence significative entre le groupe SED₁ et les deux autres groupes SED; (2) le groupe SED₁ a obtenu des résultats nettement inférieurs à ceux du groupe NON-SED₁ à trois tests d'anglais et à deux tests de mathématiques; (3) à un test d'anglais (usage) et à un test de mathématiques (concepts) les résultats des trois groupes SED se sont nettement améliorés.

par comparaison aux résultats de 1985, tandis qu'aux tests d'orthographe, de capitalisation et de calcul et à l'inventaire de l'image de soi, les résultats de ces mêmes groupes ont nettement diminué; (4) au test d'orthographe, la différence entre le groupe SED₂ et le groupe NON-SED₂ a nettement augmenté par comparaison aux résultats de l'année 1987.

Les résultats de cette étude soutiennent ceux des étapes précédentes et ils nous mènent à conclure que l'influence du milieu dans les écoles de la C.E.P.G.M. qui sont hétérogènes du point de vue socio-économique n'est pas suffisante pour hausser le rendement scolaire des élèves SED dans ces écoles au dessus de celui des élèves SED dans les écoles de milieu défavorisé. De plus, il n'y a aucune indication que la différence entre les résultats des élèves SED et ceux des élèves NON-SED dans ces écoles diminue avec le temps.

Summary

This study constitutes the third phase of a longitudinal evaluation designed to assess the academic achievement and affective characteristics of pupils from socio-economically disadvantaged backgrounds (SED pupils) who attend non-inner City schools of the Protestant School Board of Greater Montreal. Two grade levels were investigated: grades 3 and 6. At each grade level, the pupils in the non-inner City schools (SED₃ groups) were compared to: (1) SED pupils in inner City schools (SED₂ group) and in Core Inner City schools (SED₁ Group) and (2) NON-SED pupils studying in the same classes as the SED pupils. Moreover, the results of this year's assessment were compared to those obtained by these pupils in 1985 when they were in grades 1 and 4. In addition, the four schools of the Lakeshore School Board who had participated in last year's grade 2 evaluation were again included in the project.

A battery of English and mathematics tests and a motivation and self-concept inventory were administered to all the pupils.

The main findings for grade 3 were as follows: (1) the SED₃ group scored significantly lower than the SED₂ group in reading, capitalization, punctuation and usage; (2) the SED₃ group also

scored significantly lower than the corresponding NON-SED group all on the English language tests except punctuation; (3) there were no other significant differences between the SED₃ group and the other groups; (4) by comparison to the 1985 results, all three SED groups improved their performance in spelling, but decreased their ratings on the self-concept scale; (5) differences between the SED₃ pupils and their NON-SED peers remained steady over time; (6) between the SED and NON-SED pupils in the schools of the Lakeshore School Board there were no significant differences.

The main findings for grade 6 were as follows: (1) the SED₃ group did not differ significantly from the other two SED groups on any of the tests; (2) the SED₃ group scored significantly lower than the NON-SED₃ group on five tests: reading, capitalization, punctuation, mathematics concepts and computation; (3) by comparison to the 198⁵ results, the three SED groups improved their performance in English usage and mathematical concepts, but the scores of these groups decreased in spelling, capitalization, computation and self-concept; (4) the difference between the SED₃ pupils and their NON-SED peers increased significantly over time on the spelling test.

The findings of this study support those of the previous

phases and suggest that the effect of the environment in the P.S.G.M.¹⁴ Inner City schools is not powerful enough to raise the academic achievement of the SED pupils in these schools above that of SED pupils in Inner City schools. Moreover, there is no indication that the gap between the SED and the NON-SED pupils in these schools is decreasing over time.

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This study constitutes the third phase of a longitudinal research which investigates the academic achievement and affective characteristics of pupils from socio-economically disadvantaged families (SED pupils). Many of these pupils live in neighborhoods where conditions of poverty prevail and attend schools where the majority of the student body hails from the same kind of socio-economic background (inner city schools). On the other hand, not all SED pupils live and study in this type of environment. This is particularly true in cities like Montreal where the constant influx of new immigrants creates rapid changes in the ethnic and socio-economic composition of a given neighborhood. The schools that serve such neighborhoods often do not constitute inner city schools in the strict sense of the word. In consequence, they are not eligible for the extra government funds which enable inner city schools to implement special intervention programs and to provide additional teaching personnel and materials.

It has been argued that SED pupils who attend schools which are heterogeneous with respect to the socio-economic background of its student population (non-inner city schools) benefit from the contact with middle class children and, therefore, they do not need the same kind of support system that SED pupils in inner city schools receive. But is this

in fact so? Moreover, even if such a positive effect is found to exist, it must be asked whether it is sufficient to allow the SED pupils to function satisfactorily within their own school environment. In other words, the performance of SED pupils in non-Inner City schools must not only match that of their peers in the Inner City schools, but it must also be compatible with that of the non-SED pupils in their class. Another area of concern is whether the contact with children from middle class homes affects in some way the self-image of the SED pupils who are deprived of so many things which are taken for granted by their non-SED classmates.

Review of the Literature

Research into the academic achievement and affective characteristics of SED pupils in Montreal has concentrated on the performance of pupils in Inner City schools by comparison to pupils in non-Inner City schools, the assumption being that the latter are populated predominantly by non-SED pupils. In an extensive study conducted in the French medium schools of the Catholic School Commission of Montreal (C.E.C.M.), Houle, Montmarquette, Crespo and Mahseredjian (1983) found that student performance on French language and mathematics tests was noticeably lower in Inner City schools by comparison to non-Inner City schools. On the other hand, they found

that the differences in intellectual capacity between pupils in these two types of schools were not pronounced. These findings have recently been challenged by the outcome of an In-House study of the C.E.C.M. (February, 1985) which reports that the average scores obtained on IQ tests in Inner City schools were 20% lower than those obtained in non-Inner City schools, whereas differences in academic achievement (French and mathematics) between Inner and non-Inner City schools did not exceed 5%.

The contradiction in the results of the two studies could, of course, be due to the fact that the figures given by the In-House report are based on the combined scores of all the pupils in grades 4-6, whereas the results in Houle et al.'s study are reported on a grade by grade basis. This notion seems supported by Houle et al.'s finding that in their sample, grade level is inversely correlated with type of school with respect to the IQ factor, i.e., in the lower grades, its role is more pronounced in the Inner City schools whereas beyond grade 2, IQ assumes greater importance in non-Inner City schools. Furthermore, and perhaps more important is the fact that both studies base their comparisons on data obtained from the entire student body in a given grade (Houle et al.) or in a given school (C.E.C.M. In-House report). Thus, no consideration

is given specifically to the SED pupils in the sample. As the In-House report suggests, the relationship between socio-economic factors and scholastic achievement should also be examined at the level of the individual pupil. Such an approach would allow for a comparison of the achievement of SED pupils to that of non-SED pupils studying in the same type of school. One would then still have to compare the performance of SED pupils across different types of schools in order to assess the effect of the environment on academic achievement. Moreover, since the student body in the non-inner city schools is rarely uniform with respect to the socio-economic factor, one must also take into account the percentage of SED pupils within each school. It may well be that the results vary across schools depending on the proportion of SED pupils within their walls.

Interestingly, practically no research has been conducted along these lines in Canada. The importance of this variable has, however, been demonstrated by the findings from studies related to the effect of desegregation on the academic achievement of black pupils in the United States. Many of these studies show that the test scores of black pupils in desegregated schools were significantly higher than those of pupils who still attended segregated schools at the time of

the research [Anderson, 1966; Coleman et al., 1966; Stallings, 1959; Sullivan, 1968]. However, the academic achievement of blacks in desegregated schools was found to be directly related to the percentage of white pupils in the classroom (McPartland, 1969). Moreover, the positive effect of the environment on the black pupils' performance seemed to be upheld only if the overall proportion of white pupils in the school was at least 40% (Cohen, Pettigrew and Riley, 1972).

The academic achievement of black pupils in desegregated schools has also been compared to that of white pupils at the same grade levels. Here the findings from the American studies are less positive. Both Hansen (1960) and Stallings (1959) report that although the black pupils in desegregated schools progress more rapidly than white pupils in these schools, their test scores remain inferior to those of the same white pupils even after a number of years in this type of environment. Thus, it may be the case that even when the proportion of SED pupils in the class is relatively low, these pupils cannot reach the same academic level as their non-SED peers without additional pedagogical support.

The effect of desegregation on the development of the black pupils' self-image has also received considerable attention.

Here, the results are often contradictory. Bachman (1970) and Powell and Fuller (1970) found that black pupils in desegregated schools had lower self-esteem than black pupils in segregated schools. Coleman et al. (1966) reported, moreover, that, as the percentage of white pupils in a school increased, the self-esteem of both white and black pupils in the school decreased. On the other hand, Williams and Byars (1966) as well as Knight, White and Taff (1972) found no differences between the self-esteem of black pupils in segregated schools and that of their peers in desegregated schools.

Houle et al. (1983) have also examined this issue in their study of the C.E.C.M. schools. These researchers found only very small differences between pupils in inner city schools and pupils in non-inner city schools on all of the affective variables they measured. Moreover, they found no change over time suggesting that the inner city pupils' continued low academic achievement does not have a negative effect on the pupils' perception of their own abilities.

It should be noted that this research as well as the In-House study discussed earlier have been conducted solely in schools under the jurisdiction of the Catholic School Commission. Within the schools of the Protestant School Board of Greater

Montreal (P.S.B.G.M.), research into the academic achievement of pupils in Inner and non-Inner City schools has centered mainly on the difficulties pupils from different ethnic communities face when they have to study in a language which is not their mother tongue (Adiv, 1982; Adiv and Doré, 1983, 1984a and b). The present study is the first one conducted in the P.S.B.G.M. schools which looks at the relationship between socio-economic background, scholastic achievement and affective characteristics.

The socio-economic composition of the student body in a given school is a real issue in the P.S.B.G.M. schools, particularly in those schools that are considered non-Inner City schools according to the norms established by the School Council of the Island of Montreal. The reason for this is that each of these schools serves not only pupils who live in its immediate surroundings but also pupils who come from much further away. Thus, the criterion of the socio-economic status of the neighborhood does not always reflect the socio-economic composition of the student body in the school. In fact, in many of the P.S.B.G.M. non-Inner City schools, the proportion of SED pupils is often quite high.

An additional issue is the distinction between Inner City schools and core Inner City schools which the government uses with respect to its allocation of funds. Eighty-five percent

of the total Inner City budget is allotted to the core Inner City schools and only 15% of it is given to the others. Such a differentiation implies that the proportion of SED pupils in the Inner City schools is assumed to be sufficiently low so as to warrant only minimal pedagogical support. Here again, the P.S.B.G.M. schools are much more heterogeneous with respect to the socio-economic factor than the immediate neighborhoods in which the schools are located.

It is with the above issues in mind that this research was undertaken. It was initiated in 1985 and the present study constitutes the third phase of the evaluation. The findings from the two previous phases have been described in two earlier reports (Adiv and Doré, 1985; Adiv and Boltuc, 1986). They are briefly summarized below, after the presentation of the framework of the study.

The Study

In order to assess the academic achievement and affective characteristics of SED pupils in schools where the student population is heterogeneous with respect to socio-economic background, the P.S.B.G.M. undertook a longitudinal research in its English medium schools. The precise questions that the study addressed were as follows:

(1) Do SED pupils who attend schools which are socio-economically heterogeneous reach higher levels of academic achievement than SED pupils who attend Inner City schools?

(2) Does the self-image of SED pupils in socio-economically heterogeneous schools differ from that of SED pupils in Inner City schools?

(3) Do SED pupils who attend socio-economically heterogeneous classes reach the same level of academic achievement as the non-SED pupils who attend the same classes?

(4) Does the self-image of SED pupils in socio-economically heterogeneous classes differ from that of the non-SED pupils who attend the same classes?

(5) Does the proportion of SED pupils in the socio-economically heterogeneous classes affect the academic achievement and self-image of these pupils?

(6) Do SED pupils in socio-economically heterogeneous schools follow the same progression from one year to the next by comparison to (a) non-SED pupils in the same classes and (b) SED pupils in Inner City schools?

The Schools

Nine P.S.B.G.M. schools participated in the research. Three of the schools were core Inner City schools, three were Inner City schools (but not core) and three were non-Inner City schools. Because the Inner City schools (non-core) receive only a relatively small budget allocation, the scope of the intervention programs and special projects which are offered in these schools is quite limited. It should be noted that the variety of programs as well as their intensity are adapted, in-as-far as possible to the needs of each school; hence, there is a certain amount of variability not only between core Inner City and Inner City schools, but also within each of these groups. This factor is particularly salient with regard to the pre-kindergarten classes. The distribution of the pre-kindergarten classes in the schools which participated in this study was as follows:

- (1) In the core Inner City schools, one of the three schools had two half-day pre-kindergarten programs; one school had a full-day pre-kindergarten program and one school had a half-day program plus an extended day care program.
- (2) In the Inner City schools, all schools had half-day pre-kindergarten programs.

All of the core Inner City schools and all of the Inner City

schools also had nutrition programs, extra educational materials, teacher aides, subsidized field trips, cultural enrichment programs and special teacher/parent initiated projects. These programs were much more extensive in the core Inner City schools than in the Inner City schools.

The non-Inner City schools did not have such programs, except for a half-day pre-kindergarten program in one of the schools and the latter was not supported by Inner City funds.

In addition to the nine P.S.B.G.M. schools, four schools from the Lakeshore School Board joined the project during Phase II. All of these schools were non-Inner City schools. Moreover, the majority of their pupils (87% of those included in the sample) were non-SED pupils. Thus, the inclusion of the schools from the Lakeshore School Board provided an excellent opportunity to examine the effect of the environment under conditions where the proportion of SED pupils is much lower than in the P.S.B.G.M.'s non-Inner City schools.

Summary of Findings from the 1984-1986 Studies

During the first phase of the research (1984-1985), the study was conducted in grades 1 and 4. During the second phase (1985-1986), it was carried out in grades 2 and 5. At

each grade level, the SED pupils in the non-Inner City schools were compared to SED pupils in the Inner City schools and to those in the core Inner City schools. Each of these groups was also compared to a group of NON-SED pupils who studies in the same classes as the corresponding SED group. In the schools of the Lakeshore School Board, only the latter type of comparison was carried out since all those schools were non-Inner City schools. Moreover, only the grade 2 pupils in these schools participated in the research.

A battery of English and mathematics tests and a motivation and self-concept inventory were administered to all the pupils. The main findings pertaining to academic achievement in the P.S.B.G.M. schools were as follows: There were practically no differences between the performance of the SED pupils in the non-Inner City schools and that of the SED pupils in the Inner and core Inner City schools. On the other hand, the SED pupils tended to score lower than their NON-SED peers in all these schools. However, the differences between the SED and the NON-SED pupils were not uniform across the three types of schools. Interestingly, the gap between the level of achievement of the SED pupils and that of the NON-SED pupils was considerably greater in the core Inner City schools and in the non-Inner City schools than in the Inner City schools. In fact, in the latter

type of school, the difference between the SED and the NON-SED pupils was often statistically not significant. Closer examination of the data revealed that the scholastic achievement of the SED and NON-SED groups varied considerably across the three Inner City schools. In one of the schools, the SED pupils performed at a somewhat higher (though statistically not significant) level than their SED peers in the core Inner and non-Inner City schools, whereas in the other two schools, the NON-SED pupils, particularly those in grade 5, scored lower than the NON-SED pupils in the other two types of schools.

The study also shows that, overall, differences between the SED and the NON-SED pupils were more pronounced in the upper elementary school (grades 4 and 5) than in the lower elementary school (grades 1 and 2). Moreover, the comparison of the test results obtained in 1985-1986 to those received by the same pupils a year later indicates that whereas from grade 1 to grade 2, the differences between SED and NON-SED pupils decreased slightly in all three types of schools, from grade 4 to grade 5, they did so only in the core Inner City and Inner City schools. In the non-Inner City schools, the differences between the SED and the NON-SED pupils remained stable from grade 4 to grade 5 and in one subject (mathematical concepts), the gap between these two groups actually widened.

In terms of grade equivalent scores, the SED pupils in all three types of schools scored two to ten months below grade level except in mathematics computation where they scored generally at or above grade level. The NON-SED pupils performed within a two to three months range of the expected grade level.

These findings lead to several conclusions with respect to the academic achievement of SED and NON-SED pupils in the P.S.B.G.M.'s schools. First, the effect of the environment in the non-inner City schools does not seem to be powerful enough to raise the academic achievement of the SED pupils in these schools above that of the SED pupils in the inner City schools (core and non-core). Second, the environment seems to be more influential in the lower grades than in the upper grades, suggesting that its effect may be inversely related to the complexity of the learning tasks. Third, intervention programs and other types of pedagogical support systems provided in inner City schools seem to be essential for both SED and NON-SED pupils. It is possible that when such pedagogical support is minimal, the environment in the inner City schools is not sufficiently stimulating to allow the NON-SED pupils to maintain a significantly higher level of academic achievement than that of the SED pupils in the same classes.

In contrast to the findings for the P.S.B.G.M. schools, no significant differences were noted between the SED and the NON-SED pupils in the schools of the Lakeshore School Board although here too, the SED pupils tended to score numerically somewhat lower than the NON-SED pupils. Nevertheless, both groups performed at or above grade level on all the tests. These findings suggest that the school environment can have a positive effect on the academic achievement of SED pupils; however, this factor seems to be only in evidence when the proportion of SED pupils in the school is considerably lower than that in the P.S.B.G.M. non-inner city schools.

With respect to the affective characteristics, there were no consistent differences between the various groups. Thus, it would seem that the contact with middle class children does not have a negative effect on those aspects of the self-image that were evaluated in this research (role expectancy, self-adequacy, achievement needs and achievement investment). Nevertheless, it is of interest to note that the grade 2 students in the P.S.B.G.M.'s non-inner city schools demonstrated slightly lower goal achievement needs than the grade 2 pupils in the schools of the Lakeshore School Board.

The 1986-1987 Study

The present study constitutes the third and final phase of this research project. It was conducted in the same schools that participated in the previous study (nine P.S.B.G.M. schools and four schools from the Lakeshore School Board). This time the grade 3 and grade 6 classes were tested in the P.S.B.G.M. schools. In the schools of the Lakeshore School Board, only the grade 3 classes were evaluated.

The Subjects

Seven hundred and twenty-four pupils participated in this year's study. Five hundred and eight of them attended P.S.B.G.M. schools and the others attended schools of the Lakeshore School Board. Two hundred and forty-nine of the pupils in the P.S.B.G.M. schools and all the pupils from the Lakeshore School Board were in grade 3. The remaining 259 pupils in the P.S.B.G.M. schools were in grade 6. For exact sample sizes according to school type (core inner, inner and non-inner City schools), see Tables 1A and 14A.

Four hundred and eleven of the pupils in the P.S.B.G.M. schools and 179 of the pupils in the schools of the Lakeshore School Board had participated in last year's study. Most of the others had attended other schools during the 1985-1986

school year. A small number were pupils who had been in the same schools but had to repeat a year (slightly over 2% of the total sample at each grade level). The identification of the SED pupils within that part of the sample which had not participated in last year's evaluation was again done in conjunction with each individual school and was based on the same criteria used in the previous evaluations.

In the F.S.B.G.M. schools, the classes at each grade level were grouped as in the previous studies, i.e., once according to school profile (core inner city schools, inner city schools and non-inner city schools) and once according to the proportion of SED pupils in each class irrespective of school profile (SED concentration). The following criteria were used for the latter classification: (1) 80% - 100% SED pupils per class; (2) 55% - 79% SED pupils per class and (3) less than 55% SED pupils per class.

In all, there were three groups of SED pupils and three groups of NON-SED pupils in each type of classification. These groups will be identified, hereafter, as follows:

(1) Classification according to profile:

SED₁ = SED pupils in core inner city schools

SED_2 = SED pupils in Inner City schools

SED_3 = SED pupils in non-Inner City schools

$NON-SED_1$ = NON-SED pupils in core Inner City schools

$NON-SED_2$ = NON-SED pupils in Inner City schools

$NON-SED_3$ = NON-SED pupils in non-Inner City schools

(2) Classification according to SED concentration within each class:

SED_1 = SED pupils in classes with 80% - 100% SED pupils

SED_2 = SED pupils in classes with 55% - 79% SED pupils

SED_3 = SED pupils in classes with less than 55% SED pupils

$NON-SED_1$ = NON-SED pupils in classes with 80% - 100% SED pupils

$NON-SED_2$ = NON-SED pupils in classes with 55% - 79% SED pupils

$NON-SED_3$ = NON-SED pupils in classes with less than 55% SED pupils

Since all the schools from the Lakeshore School Board were non-Inner City schools with a low concentration of SED pupils, the above classifications did not apply to them. Hence, the pupils from the four schools were simply grouped according to the SED/NON-SED distinction.

The groupings according to profile and concentration reveal some interesting information regarding the distribution of SED pupils across the P.S.B.G.M. schools. First, only one

core Inner City school had a very heavy concentration of SED pupils (over 80%) at both the grade 3 and the grade 6 level. On the other hand, one Inner City (but not core) also had over 80% SED pupils in one of its classes. Second, only one of the non-Inner City schools had a relatively low concentration of SED pupils (below 35%) both at the grade 3 and at the grade 6 level. Third, within the total sample, there was a higher concentration of SED pupils in grade 3 than in grade 6 (for further details, see Tables 1B and 14B). All of these characteristics are similar to those noted in last year's study with the exception of the proportion of repeating students which was considerably smaller this year.

In addition to socio-economic status, ethnic background and mother tongue were also considered as possible influencing factors on the pupils' academic achievement and self-image. In particular, it was felt that English language skills might be affected if children spoke a language other than English in the home. As in the previous two studies, it was found that only 12% of the pupils in the core Inner City schools (in both grade 3 and grade 6) did not speak English as their mother tongue. In contrast, fully 42% of the pupils in the Inner City schools (38% in grade 3 and 46% in grade 6) and 26% of the pupils in the non-Inner City schools (16% in grade 3 and 34%

in grade 6) were not native English speakers. Thus, the core Inner City schools had significantly more pupils who spoke English as their mother tongue than the other two types of schools. It is also noteworthy that the proportion of non-native speakers in the Inner City schools is larger this year than it had been during Phase II of the project (42% this year, 38% last year). Moreover, the non-native English speakers were not evenly distributed across these Inner City schools. In two of the schools, practically all of the pupils in the grades included in the study were native English speakers. On the other hand, in the third school, only 18% of the pupils in grades 3 and 6 spoke English as their mother tongue and 82% were non-native speakers.

This extreme diversity in the linguistic and cultural background of the student population in our sample is a characteristic of the P.S.B.G.M. schools in general and it was, therefore, impossible to hold the mother tongue factor constant across the three groups of schools. It should, however, be noted that the proportion of native and non-native English speakers was, in most cases, fairly evenly divided between the SED and NON-SED pupils in each class.

In the schools of the Lakeshore School Board, practically all of the pupils were native English speakers. However, six

percent of them spoke a second language in addition to English at home. All of these pupils belonged to the NON-SED group.

The Instruments

Three types of instruments were used at each of the two grade levels: (1) a battery of achievement tests to assess English language and mathematics skills; (2) a self-concept and motivation inventory and (3) a test of non-verbal ability. Each test is briefly described below.

(1) The English Language and Mathematics Tests

The Canadian Tests of Basic Skills (CTBS, Nelson 1981) were used to assess English language and mathematics skills. Level 9 of the multi-level edition (metric version) was used in grade 3 and level 12 of the same edition was used in grade 6.

The following English language tests were administered at both grade levels: vocabulary, reading, spelling, capitalization, punctuation and usage. In mathematics, three tests were given in each grade: mathematics concepts, problems and computation. All of the tests are multiple-choice tests and none requires any writing on the part of the pupils. In contrast to the grade 1 and grade 2 versions of the CTBS, all the stimulus items in grade 3 are given in written form, just as they are

in grades 4, 5 and 6. Hence, after the instructions have been given, the pupils can proceed at their own rate on all the tests. It should be noted that the reading test consists of complete passages followed by questions with multiple-choice answers. The passages vary in length from about 50 - 400 words in grade 3 and up to approximately 800 words in grade 6.

(2) The Self-Concept and Motivation Inventory (SCAMIN)

This inventory developed by Milchus, Farrah and Reitz (1968) provides a profile of how a pupil perceives his or her role as a learner and his or her expressed need to achieve in school. The inventory consists of 48 statements to which the pupils have to respond by indicating on a scale from 1-5 how happy each statement would make them. The scale itself is given to the pupils in the form of five different faces going from very happy to very sad. The pupils' responses are grouped into four categories: role expectancy, self-adequacy, achievement needs and achievement investment. The first two categories make up the self-concept profile and the last two categories indicate the motivation profile. It should be noted that the self-concept profile refers to a pupil's self-concept in relation to school (academic self-concept). It gives an indication as to how the pupil accepts the expectations others have of him (role expectation) and how he or she views his or her chances of success.

(3) The Non-Verbal Ability Test

The test used for the assessment of non-verbal ability was Raven's Progressive Matrices test. This test is designed to assess a person's ability to "observe and think clearly" (Raven, 1965, p. 3). The test contains several sections. Each section contains a number of pattern completion tasks which increase progressively in complexity. Two versions of the test are available: a colored version for the elementary grades and a standard version for older children and adults. Since the test does not require language skills, it is particularly suitable in situations where the language of instruction may not be the mother tongue of all the children. It is with this issue in mind that the test was used in the present study (colored version in grade 3, and standard version, sections A, B, C and D, in grade 6).

Administration Procedures

In every school included in the sample, all the grade 3 classes (P.S.B.G.M. and Lakeshore School Board) and all the grade 6 classes (P.S.B.G.M. only) were given the full battery of tests. In order to disturb classroom routines as little as possible, the tests were administered to all the pupils in a given class. However, the test results of pupils with severe learning disabilities and those of non-native English speakers

who had been in the country for less than two years were excluded from the data analysis.

The tests were administered in May 1987 except for the grade 6 CTBS which were administered in February of that same year. All the tests were given by native English speakers who were especially trained for the specific tasks they had to perform.

Procedures for the Analysis of the Data

The results of the P.S.B.G.M. schools were analysed once according to school profile (core Inner City, Inner City and non-Inner City) and once according to SED concentration (80% - 100%, 55% - 79% and less than 55% SED pupils in the class).

For the analysis according to school profile, a 2 X 3 factorial design was used. School profile and SED versus NON-SED were the independent variables. Separate analyses were carried out for each test and at each grade level. Whenever significant main effects were noted, a one-way analysis of variance and a Newman Kuuls procedure of multiple comparisons were used to determine which groups differed significantly from one another.

The same technique was applied to the analysis according to concentration in grade 6. In grade 3, on the other hand, the number of pupils in the 80% - 100% SED concentration was so small that the 2 x 3 factorial design could not be applied. In consequence, only the one-way analysis of variance and the Newman Keuls procedures were used here.

In addition, a third set of comparisons was carried out in order to see whether there were significant changes between the outcome of the previous studies and that of this year's study. For this analysis, only the test scores of pupils who had participated in all three evaluations were retained. Moreover, the comparison was carried out only according to school profile, since the SED concentration at the classroom level changes when pupils are regrouped the following year and/or if new pupils join the class. Finally, since the number of test items on the CTBS differs at each grade level, the raw scores were calculated in percentages and an arcsine transformation was used for the statistical analysis. Tests which were not administered consistently were excluded. Two separate two-way analyses were carried out. The independent variables were school profile, SED versus NON-SED grouping and year (1985 versus 1987). Here, again, significant main effects and interactions were analyzed further using the one-way analysis of variance and Newman Keuls procedures.

The results of the schools from the Lakeshore School Board were analyzed using a one-way analysis of variance. The independent variables were SED group and NON-SED group.

In order to minimize the effect of possible differences in mental capacity between the groups on the results of the various academic tests, the scores of the Progressive Matrices tests were analyzed first. Wherever significant differences between the groups emerged from this analysis, the Progressive Matrices scores were used as a covariate in the analysis of the results obtained from the other tests [for a brief description of this procedure, see Appendix I].

In addition, the raw scores from the CTBS and from the SCAMIN were transformed into grade equivalents and stanine scores respectively (See Appendix II and Appendix III for descriptions). Norm-based comparisons were then carried out between the six groups at each grade level.

Results

P.S.B.G.M. Schools

Grade 3

Results of the Analysis According to School Profile

The analysis of the Raven Matrices test scores of the grade 3 pupils reveals no significant differences among the groups. Hence a simple analysis of variance procedure was used in the analysis of the other test results. The outcome of this analysis reveals a significant main effect for the SED vs. NON-SED comparison on all the English and mathematics tests. For school profile (Core Inner vs. Inner vs. non-Inner), there was a main effect on all the English language tests except for the vocabulary test and no main effect on any of the mathematics tests. Similarly, there were no significant main effects on any of the test results pertaining to the measurement of the affective characteristics (motivation and self-concept). Moreover, there were no significant interactions between the two independent variables (school profile and SED/NON-SED grouping) on any of the tests (for the numerical values of the relevant F ratios see Table 2).

Further analysis of the main effects according to school profile indicates that the SED₂ group (Inner City schools) scored

significantly higher than the SED₃ group (non-inner city schools) on four English language tests: reading (SED₂, $\bar{X} = 23.73$; SED₃, $\bar{X} = 19.31$), capitalization (SED₂, $\bar{X} = 16.34$; SED₃, $\bar{X} = 12.95$), punctuation (SED₂, $\bar{X} = 12.10$; SED₃, $\bar{X} = 9.63$) and usage (SED₂, $\bar{X} = 13.72$; SED₃, $\bar{X} = 11.09$). Differences between the SED₂ group and the SED₁ group (core inner city schools) were only significant on the reading test (SED₁, $\bar{X} = 20.20$; SED₂, $\bar{X} = 23.73$) and on the spelling test (SED₁, $\bar{X} = 16.34$; SED₂, $\bar{X} = 20.11$). Between the SED₁ group and the SED₃ group there were no significant differences. However, numerically, the latter group scored lower than the former on most of the English language and mathematics tests (see Table 3).

The comparison between the SED groups and the NON-SED groups within each type of school reveals that in the core inner city schools, the NON-SED group scored significantly higher than the SED group on the vocabulary test (SED₁, $\bar{X} = 16.37$; SED₂, $\bar{X} = 20.19$), the reading test (SED₁, $\bar{X} = 20.20$; SED₂, $\bar{X} = 25.70$), on the spelling test (SED₁, $\bar{X} = 16.94$; SED₂, $\bar{X} = 21.09$), on the capitalization test (SED₁, $\bar{X} = 14.10$; SED₂, $\bar{X} = 20.00$) and on the English usage test (SED₁, $\bar{X} = 11.47$; SED₂, $\bar{X} = 15.30$). In the inner city schools, the difference between the SED and NON-SED groups was significant on only one test, namely the spelling test (SED₂, $\bar{X} = 20.12$; NON-SED₂, $\bar{X} = 23.14$). In the non-inner city

schools, the difference was significant on four English language tests: vocabulary (SED₃, $\bar{X} = 17.70$; NON-SED₃, $\bar{X} = 20.67$), reading (SED₃, $\bar{X} = 19.31$; NON-SED₃, $\bar{X} = 24.33$), spelling (SED₃, $\bar{X} = 17.43$; NON-SED₃, $\bar{X} = 21.95$) and capitalization (SED₃, $\bar{X} = 12.95$; NON-SED₃, $\bar{X} = 16.68$). Moreover, the NON-SED₃ group scored significantly higher than the SED₃ group on two mathematics tests: concepts (SED₃, $\bar{X} = 15.07$; NON-SED₃, $\bar{X} = 17.40$) and computation (SED₃, $\bar{X} = 23.32$; NON-SED₃, $\bar{X} = 27.65$). Interestingly, there were no significant differences between any of the SED and NON-SED groups on the problem solving test. Similarly, the groups did not differ from one another on the motivation and self-concept scales (see Tables 4, 5 and 6 for the numerical values of the means obtained on tests where the between-group differences were not significant).

The grade equivalent scores indicate a pattern similar to the one noted in the analysis of the raw scores, i.e., the SED pupils' performance was weaker than that of the NON-SED pupils and this tendency was more pronounced in the core Inner City schools and in the non-Inner City schools than in the Inner City schools. Moreover, the gap between the achievement of the SED pupils and that of the NON-SED pupils was much wider in English than in mathematics (see Table 7).

According to the standardized norms for the CTBS, the grade 3 pupils should have been at a grade level of about 38-39 since they were tested in May. The test results suggest that the three NON-SED groups scored within a two to three month range of this level and in some instances as much as four to six months above grade level. Only the NON-SED₃ group was considerably weaker in one area of the English language skills (usage). Among the SED groups, the SED₁ and SED₃ groups ranked three to eight months below grade level, except in computation where they scored at the expected level. Their weakest areas of achievement were reading and English usage. The performance of the SED₂ group was markedly better than that of the other two SED groups and reached the expected grade level in two of the English language tests (spelling and capitalization) and in two of the mathematics test. (concepts and computation - on the latter their performance was actually above grade level).

The norms for the SCAMIN are given in stanine points. Moreover, since these norms are indicated separately for each of the four categories which make up the inventory, the raw scores obtained on the SCAMIN in the present study have been transformed according to the same four categories. The results show that the groups did not differ from one another by more than one stanine point and all of them scored within the average range of

the stanine scale except for the achievement needs of the NON-SED₂ group which were above average (see Table B).

Results of the Analysis According to SED Concentration

The finding to be noted here is that there was only one pupil in the NON-SED₁ group. Hence, the two-way analysis of variance could not be carried out. Moreover, the comparison between the SED and NON-SED pupils in the core inner city schools could not be carried out. However, all the other comparisons follow the same pattern as in the "by profile" analysis. The Raven Matrices test scores were again analyzed first. As in the case of the "by profile" analysis, there were no significant between-group differences on this test and a regular one-way analysis of variance procedure was, therefore, used in the analysis of all the other test results.

The comparison of the test scores of the SED groups in the three different levels of concentration indicates that both the SED₂ group (55% - 79% SED concentration) and the SED₃ group (below 55% SED concentration) scored significantly higher than the SED₁ group (80% - 100% SED concentration) on the vocabulary test: (SED₁, $\bar{X} = 12.90$; SED₂, $\bar{X} = 17.80$; SED₃, $\bar{X} = 18.16$). The SED₂ group also scored significantly higher than the SED₂ group on the reading test (SED₁, $\bar{X} = 16.60$; SED₂, $\bar{X} = 22.44$) and on the

capitalization test (SED_1 , $\bar{X} \approx 10.55$; SED_2 , $\bar{X} \approx 15.30$). The differences on the other tests were not significant but, numerically, the SED_2 group scored higher also here than the other two groups (see Table 9 for details).

The comparison of the SED and NON-SED pupils grouped according to concentration shows that the differences between the groups are much more pronounced here than when the students are grouped according to profile. This pattern was particularly noticeable in the 55% - 79% concentration where the scores of the SED group were significantly lower than those of the NON-SED group on most of the English language tests: vocabulary (SED_2 , $\bar{X} \approx 17.80$; NON- SED_2 , $\bar{X} \approx 21.56$), reading (SED_2 , $\bar{X} \approx 22.44$; NON- SED_2 , $\bar{X} \approx 27.63$), spelling (SED_2 , $\bar{X} \approx 18.62$; NON- SED_2 , $\bar{X} \approx 22.14$), capitalization (SED_2 , $\bar{X} \approx 15.30$; NON- SED_2 , $\bar{X} \approx 17.74$), English usage (SED_2 , $\bar{X} \approx 12.30$; NON- SED_2 , $\bar{X} \approx 15.98$). In the below 55% SED concentration, the differences between the SED and NON-SED groups were significant on the reading test (SED_3 , $\bar{X} \approx 19.55$; NON- SED_3 , $\bar{X} \approx 23.53$), on the spelling test (SED_3 , $\bar{X} \approx 18.11$; NON- SED_3 , $\bar{X} \approx 20.89$), on the capitalization test (SED_3 , $\bar{X} \approx 13.93$; NON- SED_3 , $\bar{X} \approx 17.77$) and on one mathematics test, namely computation (SED_3 , $\bar{X} \approx 24.39$; NON- SED_3 , $\bar{X} \approx 28.52$). The results from the SCAMIN show no significant differences between any of the groups on either the motivation scale or the

self-concept scale (see Tables 9, 10 and 11).

The grade equivalent scores reveal that the achievement of the SED₁ group was noticeably weaker than that of the other two SED groups. In fact, the performance of the SED₁ group was eight to ten months below the expected grade level on all the English language tests. The grade equivalents of the other groups were similar to those noted in the "by profile" analysis, although the gap between the SED₂ and the NON-SED₂ groups was greater here, particularly on the vocabulary and reading tests (Compare Tables 7 and 12).

Similarly, the stanine scores did not differ much from those noted in the "by profile" analysis, except that the achievement needs of the NON-SED₂ pupils were not above average here (see Table 13).

Grade 6

Results of the Analysis According to School Profile

The analysis of the Raven Matrices test scores of the grade 6 pupils reveals that the differences among the groups were only marginally significant for this test ($F = 3.02$, $p < .053$, $df = 2,238$), and it was, therefore, felt that the

mental capacity factor would not affect between-group differences that may emerge in the analysis of the other test results. Hence, here again, a simple analysis of variance procedure was used to compare the groups on all the other tests. The outcome was a main effect for group (SED vs. NON-SED) on three English language tests (vocabulary, capitalization, punctuation) and on two mathematics tests (computation, problem-solving). For school profile, there was a main effect on the vocabulary test, on the capitalization and the punctuation tests and, in mathematics, on the computation test. Moreover, there was a main effect here on the motivation component of the SCAMIN. On the other hand, there were no significant interactions between group and profile on any of the variables (see Table 15 for the exact F ratios).

Further analysis of the main effects pertaining to school profile discloses that these main effects reflected the combined scores of the SED and NON-SED groups in each type of school and did not necessarily apply to the test scores of the three SED groups when the latter were considered on their own. In fact, the SED₁, SED₂ and SED₃ groups did not differ significantly from one another on any of the tests except for the motivation measure where the scores of the SED₁ group ($\bar{X}=97.02$) were significantly higher than those of the SED₂ group ($\bar{X}=93.65$).

For the numerical values of the means obtained by each group on the various tests, see Table 16.

The comparison of the SED and NON-SED groups in each type of school shows that the scores of the SED groups in the core Inner City schools and in the non-Inner City schools were consistently lower than those of the corresponding NON-SED groups (compare Tables 17 and 19). In the case of the core Inner City schools, the differences were significant on the reading test (SED_1 , $\bar{X} = 25.60$; $NON-SED_1$, $\bar{X} = 29.88$), on the mathematics concept test (SED_1 , $\bar{X} = 21.78$; $NON-SED_1$, $\bar{X} = 26.47$) and on the computation test (SED_1 , $\bar{X} = 26.89$; $NON-SED_1$, $\bar{X} = 30.52$). In the non-Inner City schools, the differences were significant on the reading test (SED_3 , $\bar{X} = 28.32$; $NON-SED_3$, $\bar{X} = 32.21$), on the capitalization test (SED_3 , $\bar{X} = 16.77$; $NON-SED_3$, $\bar{X} = 19.40$), on the punctuation test, (SED_3 , $\bar{X} = 16.60$; $NON-SED_3$, $\bar{X} = 19.51$), on the mathematics concept test (SED_3 , $\bar{X} = 22.77$; $NON-SED_3$, $\bar{X} = 25.95$) and on the computation test (SED_3 , $\bar{X} = 30.10$; $NON-SED_3$, $\bar{X} = 33.69$). In contrast, the scores of the SED pupils in the Inner City schools (SED_2) were not always lower than those of their NON-SED peers ($NON-SED_2$) and none of the differences between these two groups were significant (see Table 18).

The grade equivalent scores reveal a pattern similar to the one noted in the analysis of the raw scores with the SED pupils, particularly the ones in the core inner and non-inner City schools, performing at a lower level than the corresponding NON-SED pupils (see Table 20). In terms of standardized norms, the grade 6 pupils should have been at a grade level of approximately 66 since they were tested in February. The results show that the three SED groups scored two to eight months below grade level, except in mathematical concepts and computation where all three groups scored at or above grade level. These results are in keeping with those noted throughout this study. On the other hand, the pattern for the NON-SED groups is very irregular here. First, the grade equivalent scores of the NON-SED₁ and the NON-SED₂ groups were markedly lower than those of the NON-SED₃ group. Achievement was especially low among the NON-SED₂ pupils who scored seven months below grade level in reading and problem solving and as much as nine months below grade level in English usage. Most of the other scores of the NON-SED pupils were within a two to three month range of the expected grade level and, in computation, all three groups scored well above grade level. The NON-SED₃ group also scored six months above grade level in punctuation.

The stanine scores on the SCAMIN show little variation and

all but one of them range within the average range of the SCAMIN scale. The exception is the NON-SED₂ group's score on the role expectation measure which was one point below average (see Table 21).

Results of the Analysis According to Concentration

The analysis of the grade 6 results according to concentration reveals no significant differences on the Raven Matrices test. Hence, here too, a regular two-way analysis of variance procedure was used to compare the results obtained on the other tests. The results of this analysis show a significant main effect on all the English language and mathematics tests for the SED/NON-SED grouping. In comparison of the SED pupils in the three types of concentration, there was a main effect on three English language tests (vocabulary, reading and spelling) and on two mathematics tests (problem solving and computation). Conversely, there were no main effects on the motivation and self-concept scales. Moreover, there were no significant interactions between grouping and SED concentration on any of the tests (see Table 22 for the exact F ratio values).

The comparison of the test scores of the SED₁, SED₂ and SED₃ groups shows no significant between-group differences on any of the tests (see Table 23). Similarly, there were no significant differences between the SED₂ and the NON-SED₂

groups (55% - 79% SED concentration). In contrast, the SED₁ group (80% - 100% SED concentration) and the SED₂ group (less than 55% SED concentration) scored significantly lower than the corresponding NON-SED groups on three English language tests (reading, capitalization and punctuation) and on all three mathematics tests (see Tables 24, 25 and 26 for the SED/NON-SED comparisons).

The grade equivalent scores show that the three SED groups performed at practically the same level on most of the tests (see Table 27). The NON-SED groups display the same irregular pattern that was noted in the "by profile" analysis although here the NON-SED₁ group was the group that scored highest. In fact, in terms of the standardized norms, the NON-SED₁ group performed nine to fourteen months above grade level on several English tests and on two of the mathematics tests. Hence, the gap between the SED₁ group and the NON-SED₁ group was much more pronounced here. It should, however, be borne in mind that the NON-SED₁ group consisted of only six pupils; hence, the range of scores was much smaller for this group than for the other groups. Between the SED₂ group and the NON-SED₂ group there were again only very slight differences and, in some instances, the level of performance of the latter group was even slightly lower than that of the former.

The stanine scores on the SCAMIN inventory differed only slightly from those that had been noted in the "by profile" analysis. Moreover, all of the scores remained within the average range of the SCAMIN scale except for those of the NON-SED₂ group on role expectations which were again one point below that average range (see Table 28).

Comparison of the 1985 and 1987 results

The analysis described in this section was undertaken in order to assess whether the performance of any of the SED groups had changed over time (1985 - 1987) by comparison to the other two SED groups and by comparison to the corresponding NON-SED groups. For this purpose, three independent variables were considered: school profile, SED versus NON-SED grouping and year, i.e., 1985 versus 1987. A two-way analysis of variance was used for each set of comparisons and only the test results of those pupils who had participated in both the 1985 and the 1987 evaluations were used here (for exact sample sizes see Table 29). Moreover, as noted earlier, each pupil's score was recalculated as a percentage of the maximum score. An arcsine transformation was then used for the statistical analysis of the data.

Grades 1 and 3

For the comparison of the grade 1 and grade 3 results, only those tests which had been administered at both grade levels were used. These consist of three English language tests (reading, spelling and usage), all three mathematics tests and the motivation and self-concept measures.

The results of analyses pertaining to the comparison of the three SED groups show that the performance of all three groups improved over time in spelling ($F = 40.54, p < .001, df = 2,77$) and remained steady in all the other subjects (for the percentage values of all the test scores see Table 30). There was also an increase on the motivation scale from grade 1 to grade 3 ($F = 5.43, p < .05, df = 2,77$). On the other hand, the ratings of all three groups on the self-concept scale decreased over time ($F = 8.81, p < .01, df = 2,76$).

Moreover, there were significant differences among the three SED groups at the two grade levels. First, there was a main effect for spelling with the SED pupils in the Inner City schools obtaining proportionally higher scores than the SED pupils in the core Inner City schools at both grade levels ($F = 3.29, p < .05, df = 2,77$). Second, there were interactions

on practically all the other tests. On all of these tests, there was no significant difference between the three groups in grade 1, whereas in grade 3, the SED pupils in the inner city schools scored consistently higher than the other two groups. In reading, the difference was significant between the SED₂ and SED₃ groups ($F = 5.29, p < .01, df = 2,73$). In usage, mathematical concepts and problem solving, the difference was significant between the SED₁ and SED₂ groups (usage, $F = 7.66, p < .001$; concepts, $F = 6.27, p < .01$; problem solving, $F = 3.03, p < .05, df = 2,83$). Only in computation, the groups did not differ significantly from one another at either grade level. Moreover, there were no significant between-group differences on the measures pertaining to motivation and self-concept.

The comparison of the SED and NON-SED pupils in the core inner city schools reveals that the reading scores decreased proportionally over time ($F = 6.01, p < .05, df = 1,30$). Similarly, the self-concept results in grade 3 were again significantly lower than those in grade 1 ($F = 4.20, p < .05, df = 1,36$). In contrast, both groups improved their performance in spelling ($F = 24.20, p < .001, df = 1,37$). There was no main effect for time on any of the other test results. However, there was a main effect for grouping on spelling ($F = 9.67,$

$p < .01$, $df = 1,37$), usage ($F = 11.33$, $p < .01$, $df = 1,36$), mathematical concepts ($F = 4.60$, $p < .05$, $df = 1,38$) and problem solving ($F = 10.20$, $p < .01$, $df = 1,38$). On all these tests, the performance of the NON-SED group was significantly higher than that of the SED group. Furthermore, in computation, there was no significant difference between the SED and the NON-SED groups in grade 1, whereas such a difference emerged in grade 3 ($F = 4.25$, $p < .05$, $df = 1,36$).

In the inner city schools, there was a significant main effect for time on spelling ($F = 37.05$, $p < .001$, $df = 1,59$), usage ($F = 4.47$, $p < .05$, $df = 1,58$), concepts ($F = 6.57$, $p < .05$, $df = 1,64$) and problem solving ($F = 12.04$, $p < .001$, $df = 1,63$). On all of these tests, the performance of both groups improved over time. On the other hand, the ratings on the self-concept scale decreased here, too, from grade 1 to grade 3 ($F = 4.90$, $p < .05$, $df = 1,60$). Between the SED group and the NON-SED group, there was a main effect for spelling ($F = 4.89$, $p < .05$, $df = 1,59$), usage ($F = 9.05$, $p < .01$, $df = 1,58$) and motivation ($F = 7.03$, $p < .01$, $df = 1,61$). On all of these variables, the performance of the NON-SED group was significantly better than that of the SED group at both grade levels.

Finally, in the non-inner city schools, there was a main

effect for time on spelling, computation and self-concept. In spelling, the scores of both groups increased proportionally over time ($F = 22.62, p < .001, df = 1,65$). In the other two instances, the scores decreased (computation, $F = 4.31, p < .05, df = 1,63$; self-concept, $F = 15.05, p < .001, df = 1,56$). Moreover, in reading, there was a main effect for grouping with the NON-SED group scoring significantly higher than the SED group at both grade levels ($F = 4.40, p < .05, df = 1,60$).

Grades 4 and 6

The results pertaining to the comparison of the SED groups in the three types of schools reveal a significant main effect on practically all the English language and mathematics tests, as well as on the self-concept measure. In punctuation, usage and mathematical concepts, the scores of the three groups increased proportionally between grade 4 and grade 6 (punctuation, $F = 17.42, p < .001, df = 2,89$; usage, $F = 5.84, p < .05, df = 2,88$; concepts, $F = 6.19, p < .05, df = 2,89$). On the other hand, there was a decrease over time in spelling ($F = 4.05, p < .05, df = 2,89$), capitalization ($F = 6.41, p < .05, df = 2,89$), computation ($F = 10.21, p < .01, df = 2,86$) and self-concept ($F = 5.49, p < .05, df = 2,84$). For group, there was a

significant main effect on motivation ($F = 6.35, p < .01, df = 2,84$) and self-concept ($F = 4.67, p < .01, df = 2,84$). On both measures, the SED pupils in the Inner City schools scored consistently lower than the SED pupils in the core Inner City schools. Moreover, there were significant interactions between time and grouping in reading, and punctuation. In reading, there were no significant differences among the three SED groups in grade 4, whereas in grade 6, the performance of the SED pupils in the Inner City schools was significantly better than that of the SED pupils in the core Inner City schools ($F = 5.26, p < .01, df = 2,89$). In punctuation, there was a significant difference in grade 4 between the SED pupils in the Inner City schools and those in the non-Inner City schools, whereas in grade 6 this difference did not emerge due to a marked improvement in the punctuation scores of the latter group ($F = 3.05, p < .05, df = 2,89$).

The comparison between the SED pupils and their NON-SED peers reveals that, in the core Inner City schools, the scores of both groups decreased proportionally over time in capitalization ($F = 8.96, p < .01, df = 1,47$), computation ($F = 13.29, p < .001, df = 1,46$) and self-concept ($F = 4.91, p < .05, df = 1,44$). On the other hand, in punctuation, both groups improved their performance from grade 4 to grade 6 ($F = 5.03, p < .01, df = 1,47$).

Differences between the SED and the NON-SED pupils were significant only in computation where the NON-SED group scored markedly higher than the SED group at both grade levels ($F = 6.56, p < .05, df = 1,48$).

In the Inner City schools, there was a main effect for time on practically all the tests. In reading ($F = 11.14, p < .001, df = 1,58$) and in punctuation ($F = 8.90, p < .05, df = 1,57$), the performance of both the SED group and the NON-SED group improved over time. In contrast, the scores of the SED pupils as well as those of the NON-SED pupils decreased from grade 4 to grade 6 in capitalization ($F = 4.54, p < .05, df = 1,57$), computation ($F = 20.05, p < .001, df = 1,55$), motivation ($F = 30.46, p < .001, df = 1,55$) and self-concept ($F = 18.78, p < .001, df = 1,55$). Furthermore, there were significant interactions between time and grouping in concepts, problem solving and self-concept. In concepts ($F = 8.00, p < .01, df = 1,55$) and in problem solving ($F = 5.90, p < .05, df = 1,56$), there were no significant differences among the SED and the NON-SED pupils in grade 4, whereas such differences emerged in grade 6. In both cases, the performance of the NON-SED group decreased over time so that, by grade 6, the scores of this group were proportionally lower than those of the SED group. In a similar vein, the ratings of the NON-SED

pupils on the self-concept scale decreased over time ($F = 12.54$, $p < .0001$, $df = 1,55$). In consequence, whereas in grade 4, the NON-SED pupils had scored significantly higher than the SED pupils, in grade 6, there was no longer any difference between the two groups.

In the non-inner City schools there was again a main effect for time on practically all the tests. Here, the performance of both groups improved from grade 4 to grade 6 in vocabulary ($F = 4.52$, $p < .05$, $df = 1,65$), reading ($F = 19.36$, $p < .001$, $df = 1,64$), punctuation ($F = 43.99$, $p < .001$, $df = 1,64$), usage ($F = 11.24$, $p < .001$, $df = 1,63$) and mathematical concepts ($F = 14.41$, $p < .001$, $df = 1,65$). In contrast, the self-concept ratings of both groups decreased again over time ($F = 6.24$, $p < .05$, $df = 1,56$). Moreover, the SED group was significantly weaker than the NON-SED group on almost all the English language and mathematics tests. In reading ($F = 9.61$, $p < .01$, $df = 1,64$), capitalization ($F = 4.10$, $p < .05$, $df = 1,64$), punctuation ($F = 7.25$, $p < .01$, $df = 1,64$), usage ($F = 7.25$, $p < .05$, $df = 1,64$), problem solving ($F = 8.22$, $p < .01$, $df = 1,65$) and computation ($F = 5.87$, $p < .05$, $df = 1,65$), the difference was significant at both grade levels. In spelling ($F = 5.47$, $p < .05$, $df = 1,64$), it was significant only at the grade 6 level.

Schools Under the Lakeshore School Board

The sample sizes for the SED and NON-SED pupils in the four schools of the Lakeshore School Board are shown in Table 22 and the results of the statistical analyses are given in Table 33. Once again, the scores obtained on the Progressive Matrices test were analyzed first. The results show no significant difference between the SED and NON-SED pupils. Hence, here too, a simple analysis of variance procedure was used in the comparison of all the other test results.

The outcome of these analyses indicates that the scores of the SED pupils did not differ significantly from those of their NON-SED peers on any of the English language and mathematics tests. In fact, on most of the tests, the numerical values of the means were extremely close to one another (see Table 33). Similarly, there was practically no difference between the SED group and the NON-SED group on the ratings of the motivation and self-concept scales.

On the other hand, the comparison of the grade equivalent scores indicates that the NON-SED pupils performed at a slightly higher level than the SED pupils on most tests. Nevertheless, both groups performed at or above grade level on all the tests

except for reading and capitalization where there was a three to four month lag between the expected grade level (38-39) and the level attained by the SED group (see Table 34).

The stanine scores on the SCAMIN show that the SED pupils scored one point below the NON-SED pupils on both measures pertaining to motivation (goal achievement needs and achievement investment) and on one of the measures pertaining to the self-concept (self-adequacy). On the other measure of the self-concept (role expectations), both groups obtained the same stanine score (see Table 35). Moreover, both groups ranked within the average range of the stanine scale on all four measures.

Comparison of 1986 and 1987 Results

Since the schools of the Lakeshore School Board had only joined the project during Phase II, the longitudinal assessment of student performance in these schools pertains only to grades 2 and 3. Here again, only those tests that were administered at both grade levels could be included in the comparison. The results of the two-way analysis of variance used for the purpose of this comparison reveal a main effect for time on practically all the variables. In the case of

vocabulary and the mathematics concepts test, the performance of both groups improved over time (vocabulary, $F = 56.25$, $p < .001$, $df = 1,161$; concepts, $F = 16.06$, $p < .001$, $df = 1,161$). Conversely, the scores decreased proportionally in reading ($F = 31.79$, $p < .001$, $df = 1,158$), usage ($F = 91.63$, $p < .001$, $df = 1,158$) and computation ($F = 54.46$, $p < .001$, $df = 1,159$). Furthermore, the ratings of both groups on the motivation and self-concept scales were significantly lower in grade 3 than they had been in grade 2 (motivation, $F = 6.75$, $p < .01$, $df = 1,161$; self-concept, $F = 7.14$, $p < .01$, $df = 1,161$). Between the two groups, there were no significant differences, nor was the level of any of the interactions significant.

Summary and Conclusions

A. The results of the grade 3 tests in the P.S.B.S.M. schools can be summarized as follows:

(1) Comparison Between SED₁, SED₂ and SED₃ Groups

When the pupils were grouped according to school profile, the SED₂ group (Inner City schools) scored significantly higher than the SED₃ group (non-Inner City schools) on four of the English language tests. On two of these tests

it also scored significantly higher than the SED₁ group (core inner city schools). Between the SED₁ and SED₃ groups, there were no significant differences. In the analysis according to SED concentration there were no significant differences between the SED₂ group (55% - 79% SED concentration) and the SED₃ group (below 55% SED concentration) and both groups scored significantly higher than the SED₁ group (80% - 100% SED concentration) on the vocabulary test. In addition, the SED₂ group scored significantly higher than the SED₁ group in reading and capitalization. On the three mathematics tests and on the motivation and self-concept inventories, there were no significant differences irrespective of whether the pupils were grouped according to school profile or according to SED concentration.

(2) Comparison Between SED and NON-SED Groups

In the "by profile" classification, the SED₁ group scored significantly lower than the corresponding NON-SED group

on the English language tests except punctuation.

The SED₂ group scored significantly lower than the NON-SED₂ group on only one test (spelling). The SED₃ group scored significantly lower than the NON-SED₃ group on four English language tests and on two mathematics

tests. In the analysis according to SED concentration, the comparison of the SED₁ and NON-SED₁ group was omitted because of insufficient data. The SED₂ group scored significantly lower than the NON-SED₂ group on all the English language tests except punctuation. The SED₃ group differed significantly from the corresponding NON-SED group on three English language tests and on one mathematics test. On the affective characteristics, there were no significant differences between the SED and NON-SED pupils in either type of grouping.

(3) Grade Equivalent Scores

The NON-SED pupils performed within a two to three month range of the expected grade level except in spelling where the NON-SED₂ group scored six months above grade level. The SED₂ group also reached the expected grade level in two English language tests and two mathematics tests. On the other tests the achievement of this group was two to four months below grade level. The SED₁ and SED₃ groups ranked three to six months below grade level except in computation where they performed at or above grade level.

(4) Comparison of the 1985 (Grade 1) and 1987 (Grade 1) Results

The comparison between the three SED groups indicates

that these groups did not differ from one another in the grade 1 except in spelling where the scores of the SED₂ group were significantly higher than those of the SED₁ group. However, by grade 3 there were significant differences between the SED₂ group and the other two SED groups on all the English and mathematics tests except computation. In addition, all three groups improved their performance in spelling from grade 1 to grade 3. Within each type of school, there were practically no changes between grade 1 and grade 3. However, the performance of the SED groups was consistently weaker than that of the corresponding NON-SED groups. In reading the difference was significant in all three types of schools. In spelling and usage it was significant in the core inner and inner city schools. In mathematical concepts, problem solving and computation (the latter only in grade 3), it was significant only in the core inner city schools. With respect to the affective characteristics, there were no significant between-group differences except in the inner city schools where the ratings of the NON-SED group on the motivation scale were lower than those of the SED group. Moreover, on the self-concept scale, the ratings of all the SED and NON-SED groups decreased over time.

B. The results of the grade 6 tests can be summarized as follows:

(1) Comparison Between SED₁, SED₂ and SED₃ Groups

The three SED groups did not differ significantly from one another on any of the English language and mathematics tests when grouped according to school profile as well as when grouped according to SED concentration. On the affective characteristics, there was a significant difference between the SED₁ and SED₂ groups on motivation when the pupils were grouped according to profile but not when they were grouped according to SED concentration.

(2) Comparison Between SED and NON-SED Groups

In the "by profile" classification, the SED₁ and SED₃ groups scored significantly lower than the corresponding NON-SED groups in reading, mathematical concepts and computation. The SED₃ group also scored significantly lower than the NON-SED₃ group in capitalization and punctuation. Between the SED₂ group and the NON-SED₂ group there were no significant differences on any of the tests. In the analysis according to SED concentration, the SED₁ and SED₃ pupils again scored significantly lower than their NON-SED peers on three English language tests (reading, capitalization, and punctuation) and on all three mathematics tests. Furthermore, here the SED₂ pupils scored significantly lower than the NON-SED₂ pupils on

the computation test. On the motivation and self-concept inventories, there were no significant differences between any of the groups.

(3) Grade Equivalent Scores

The three SED groups scored two to eight months below grade level except in mathematical concepts and computation where they scored at or above grade level. The scores of the NON-SED groups were within a two to three month range of the expected grade level except in concepts and computation where they scored well above grade level. Among the NON-SED groups, achievement was lowest within the NON-SED₂ group where the grade equivalents in reading, English usage and problem solving were seven to nine months below grade level.

(4) Comparison of the 1985 (Grade 4) and 1987 (Grade 6) Results

Between the three SED groups there were no consistent differences from grade 4 to grade 6 on the English language and mathematics tests. However the motivation and self-concept scales, the ratings of the SED₂ group were significantly lower than those of the SED₁ group at both grade levels. Overall, the three groups improved their performance over time in punctuation usage and concepts, but decreased their scores in spelling, capitalization, computation and self-concept.

Differences between the SED and NON-SED groups at the two grade levels were as follows: the SED₁ group scored significantly lower than the NON-SED₁ group in computation; the SED₂ group scored significantly lower than the NON-SED₂ group in computation (grade 6 only) but higher than the latter in problem solving (both grade levels). The SED₃ group scored lower than the NON-SED group on all the English language tests except spelling and on two mathematics tests. There were no significant differences between the SED and NON-SED groups on the affective measures except for one instance in grade 4. Here the SED₂ group obtained a significantly higher rating than the SED₁ group on the motivation scale.

C. The results of the grade 3 tests of the Lakeshore School Board can be summarized as follows:

There were no significant differences between the SED and the NON-SED pupils on any of the tests. In terms of grade equivalents, both groups performed at or slightly above grade level except on the reading and capitalization tests where the SED group performed three to four months below grade level. There were no significant differences between the two groups on any of the measures pertaining to the motivational factors. By comparison to the grade 2 results (1986), the scores of both groups increased over time

in vocabulary and mathematical concepts and decreased in reading, usage and computation.

Several findings emerge from this year's study. First, the three SED groups differed significantly from one another in grade 3 but not in grade 6. Second, the SED pupils in the core Inner and non-Inner City schools differed significantly from their NON-SED peers, whereas there were practically no differences between the SEL and NON-SED pupils in the Inner City schools. Third, the performance of the SED pupils in the Inner City schools improved in most subjects from grade 1 to grade 3, whereas the performance of the pupils in the core Inner and non-Inner City schools remained stable in most subjects over this period of time. Fourth, from grade 4 to grade 6, there were practically no significant differences among the three SED groups in the developmental pattern of the English language and mathematics skills. Thus, the outcome of this study clearly indicates that the achievement of the SED pupils in the non-Inner City schools did not surpass that of the SED pupils in the Inner and core Inner City schools in any of the six elementary grades.

An examination of the developmental trends on a subject by sex basis shows that there was a great deal of variability in the performance of the SED pupils in all subjects. In spelling,

performance improved throughout the lower grades, but decreased across the upper grades in all three types of schools. On the other hand, there was no improvement over time in most of the SED pupils' reading scores and, in the core Inner City schools, achievement in reading decreased actually from grade 1 to grade 3. Interestingly, the SED pupils' results on the mathematics concepts test improved from grade 4 to grade 6 whereas their computation skills decreased over the same period of time.

A major conclusion to be drawn from these results is that reading skills seem to develop initially very slowly and that the development of these skills is more problematic in the core Inner City schools than in the other two types of schools. In contrast, the acquisition of other language skills, such as spelling, seems to be less difficult. This may be due, to some extent, to the nature of some of these skills. Spelling, for instance, is a skill that can probably be internalized mechanically and, hence, may involve fewer cognitive capacities than reading. Nevertheless, it is not clear why the pupils' performance in spelling decreased in the upper grades. It is possible that, as the academic demands increase, the SED pupils' ability to cope diminishes even if the subjects are cognitively less demanding. This factor may be particularly salient if the degree to which the curriculum emphasizes the

development of a given language skill varies across grades.

The developments noted in the various areas of mathematics are surprising. It is possible that, here again, the importance that the curriculum attaches to the different areas is not uniform across the grades. Thus, in the upper grades, there may be greater emphasis on the development of mathematical concepts than on the more mechanical computation skills with the latter assumed to have been mastered in the lower grades. It is also possible that, as the pupils grow older, they themselves find computation exercises less interesting than other aspects of mathematical knowledge and they, therefore, invest less effort in the latter subject. Interestingly, the noted decrease in computation skills did not apply to the NON-SED pupils. It would seem that their competence in this subject is such that they do not need further support in order to maintain the same level of achievement.

In accepting these conclusions, two factors pertaining to the analysis of the data must be taken into consideration. First, the tests increase in difficulty from one year to the next. Hence, the comparison across grades is not a direct indication of how much knowledge was gained over time, but rather a yardstick to measure how the relationship between the various groups (SED

and NON-SED) changed over the course of time. Second, the pupils who were followed through from grade 4 to grade 6 are not the same ones that were followed through from grade 1 to grade 3. Hence, the extent to which the findings can be generalized across all the elementary school grades may be limited. Nevertheless, there are a number of findings that are consistent from grade 1 through grade 6. First and foremost among these is the finding that achievement in reading and problem solving was much lower than achievement in the other subjects. In fact in the core Inner and non-Inner City schools, the SED pupils' test scores in reading and problem solving were never above the 50% mark. Moreover, the performance of the latter two groups on the other language tests, though somewhat higher, was still noticeable below grade level at all times.

With respect to the comparison between the SED and NON-SED pupils, it has already been noted that there were markedly more differences between these groups in the core Inner and non-Inner City schools than in the Inner City schools. This pattern is similar to the ones reported during the previous phases of this project. However, the longitudinal evaluation of this year's study adds a new dimension to the cross-sectional results from the other studies, namely, that in the lower grades, this pattern was a result of a steadily improving

performance of the SED pupils in the Inner City schools, whereas in the upper grades, this factor was no longer so salient. Here it was the performance of the NON-SED pupils in these schools that was so surprisingly low. In fact, in grades 5 and 6, the NON-SED pupils in the Inner City schools scored as much as seven to nine months below grade level on several English language tests as well as on the problem solving test. It is possible that the limited intervention programs in which the pupils in the Inner City schools participate are sufficient in the lower elementary grades but not in the upper ones, where the conceptual content of the subject matter is much more complex. The findings also suggest that, at these grade levels, both the SED and the NON-SED pupils in Inner City schools may need additional pedagogical support.

Another finding that emerges from the comparison of the SED pupils and their NON-SED peers is that there were more differences between these two groups in the non-Inner City schools than in the Inner and core Inner City schools and that these differences tended to increase over time in the upper grades but not in the lower grades. Interestingly, achievement improved more consistently across the upper grades in the non-Inner City schools than in the other two types of schools. However, since the NON-SED pupils made relatively more progress

than the SED pupils, the latter kept on lagging four to eight grade level points behind the former. Thus, it would seem that in these schools, too, the lack of sufficient pedagogical support becomes more apparent in the upper grades of the elementary school. On the other hand, here, this type of help is needed more prominently for the SED pupils than for the NON-SED pupils. In fact, the finding that the latter scored at or above grade level in practically all the subjects, suggests that the environment in the non-inner City schools allows the NON-SED pupils to reach a satisfactory level of academic achievement, whereas it does not have this effect on the SED pupils. The reason may, of course, lie to a large extent in factors outside the realm of the classroom setting, such as the after school activities in which the pupils engage, the parental support they receive and their home background in general. Over these factors, the school has no control and it is precisely for this reason that the school environment may be unable to raise the SED pupils' level of achievement on its own.

With respect to the SED concentration factor, no clear-cut pattern emerged. When the performance of the SED pupils was compared to that of the NON-SED pupils there were more significant between-group differences here than when the pupils were grouped according to school profile. However, when the test scores of

the three SED groups were compared to one another, this pattern was not upheld. It could be argued that the SED concentration factor enhances only differences between SED and NON-SED pupils; however, the findings from the two previous phases of this project do not support this notion. In fact, when the findings from this year's evaluation are compared to those from last year, they are quite contradictory. It is possible that the large turnover of pupils in the P.S.B.G.M. schools [approximately 20% per year] changes the socio-economic composition of the student body at the classroom level so frequently that the SED concentration factor does not exert a decisive influence on the pupils' scholastic performance.

In contrast to the findings pertaining to the comparison of the SED and NON-SED pupils in the P.S.B.G.M.'s non-Inner City schools, the findings for the schools of the Lakeshore School Board, all of which were non-Inner City schools, disclose no significant differences between the SED and the NON-SED pupils in these schools. In fact, on most of the tests, the scores of the two groups are quite close. Nevertheless, it is noteworthy that the performance of the SED pupils is somewhat below grade level in reading and capitalization. Moreover, in several subjects, noticeably reading and computation, the test scores decreased over time. These findings are surprising, particularly the

results pertaining to reading since this pattern differs from the one noted in the P.S.B.G.M.'s non-Inner City schools where performance in reading remained steady across the lower grades.

Finally, the results pertaining to the affective characteristics suggest that the socio-economic factor has no major effect on those characteristics that were evaluated here (motivation, which comprises achievement needs and achievement investment and self-concept, which comprises role expectations and self-adequacy). Similar conclusions were reached during the previous phases of the project. However, this year's longitudinal comparisons also show a consistent decrease in the pupils' self-concept over time in all the P.S.B.G.M. schools as well as in the schools under the Lakeshore School Board. Here again, there seems to be no well-founded explanation for this phenomenon. On the other hand, the finding that the grade 6 NON-SED pupils in the Inner City schools, who scored so surprisingly low on some of the English and mathematics tests, also gave themselves a below average rating on the role expectation component of the self-concept inventory suggests that this factor may be more closely associated with academic performance than other aspects of the self-concept. It is possible that as children grow older, they become less confident that they can live up to the expectations others have of them. In contrast to

the persistent decline in the pupils' self-concept, the ratings on the motivation inventory were less consistent. What is of particular interest here is that the ratings of the SED and the NON-SED pupils in the P.S.B.G.M.'s non-inner City schools did not change over time, whereas in the schools of the Lakeshore School Board, the ratings on this inventory followed the same pattern as the one noted for the self-concept. In consequence, the differences in achievement needs which had been noted in grade 2 between the pupils in the P.S.B.G.M. schools and those in the schools of the Lakeshore School Board were no longer apparent in grade 3.

In conclusion, the outcome of this study supports the hypotheses formulated during the previous phases of the research, namely, that the effect of the environment in the P.S.B.G.M.'s non-inner City schools is in itself not powerful to (1) raise the academic achievement of the SED pupils in these schools above that of SED pupils in inner City schools and (2) narrow the gap between the SED pupils and their NON-SED peers. The findings of this study also seem to support another argument already put forth previously, namely, that the NON-SED pupils in inner City schools may require the benefits of intervention programs just as much as the SED pupils. When such programs are limited in scope, as is the case in the inner (but not core-inner) City

schools, these pupils may not reach the same academic level as their NON-SED peers in the core Inner City schools. Furthermore, the study has helped to identify major areas of weakness in the achievement of SED pupils irrespective of whether they attend Inner or non-Inner City schools. Thus the study could serve as a base for the development of future intervention programs. Such programs should, however, be sufficiently flexible so as to provide teachers with pedagogical tools that are appropriate for Inner as well as for non-Inner City schools.

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Table 1A

Sample Sizes for Grade 3 According to
School Profile

Core Inner City Schools	SED ₁	53
	NON-SED ₁	23
Inner City Schools	SED ₂	53
	NON-SED ₂	23
Non-Inner City Schools	SED ₃	45
	NON-SED ₃	52

Table 1B

Sample Sizes for Grade 3 According to
SED Concentration

80% - 100% SED	SED ₁	11
	NON-SED ₁	1
55% - 79% SED	SED ₂	95
	NON-SED ₂	43
Below 55% SED	SED ₃	45
	NON-SED ₃	54

Table 2

F Ratios for Two-Way Analyses of Grade 3
Test Results According to School Profile

	School Profile	SED/NON-SED	Interaction
Non-verbal (36) ^a	0.39	0.25	0.68
English lang. skills			
- vocabulary (30)	0.59	10.30**	0.56
- reading (44)	3.42*	16.92**	0.45
- spelling (30)	3.36*	16.38***	0.12
- capitalization (28)	3.90*	20.37***	1.67
- punctuation (28)	4.61**	5.49*	0.28
- usage (27)	4.89**	12.30***	0.56
Mathematics			
- concepts (28)	2.93	3.85*	0.40
- problems (23)	1.15	4.17*	0.18
- computation (39)	0.74	7.85**	0.69
SCAMIN			
- motivation (120)	0.18	2.63	2.59
- self-concept (120)	0.04	0.89	0.77

^a Maximum scores in parentheses

* $p < .05$

** $p < .01$

*** $p < .001$

Table 3
Comparison of Test Results of SED Groups
According to School Profile^a
Grade 3

	SED ₁	SED ₂	SED ₃	F ratio ^b	df
Non-verbal (36) ^c	27.77	27.43	27.12	—	—
English lang. skills					
- vocabulary (30)	16.37	18.67	17.70	—	—
- reading (44)	20.20	23.73	19.31	4.26*	2,138
	└──────────┘ └──────────┘				
- spelling (30)	16.34	20.11	17.43	3.31*	2,142
	└──────────┘				
- capitalization (28)	14.10	16.34	12.95	3.77*	2,142
		└──────────┘			
- punctuation (28)	11.61	12.10	9.63	3.33*	2,142
		└──────────┘			
- usage (27)	11.47	13.72	11.09	3.13*	2,142
		└──────────┘			
Mathematics					
- concepts (28)	16.30	18.23	15.07	—	—
- problems (23)	10.74	12.34	10.56	—	—
- computation (39)	23.64	26.06	23.32	—	—
SCAMIN					
- motivation (120)	99.08	99.63	99.95	—	—
- self-concept (120)	87.76	84.17	86.59	—	—

^a Means joined by a line differ significantly from one another

^b — indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis.

^c Maximum scores in parentheses

* $p < .05$

Table 4
Comparison of Test Results of SED and NON-SED Groups in
Core Inner City Schools According to School Profile
Grade 3

	SED ₁	NON-SED ₁	F ratio ^a	df
Non-verbal (36) ^b	27.77	29.05	—	—
English lang. skills				
- vocabulary (30)	16.37	20.19	6.05*	1,71
- reading (44)	20.20	25.70	7.73**	1,72
- spelling (30)	16.94	21.09	5.71*	1,72
- capitalization (28)	14.10	20.00	15.76***	1,72
- punctuation (28)	11.61	13.14	1.17	1,72
- usage (27)	11.47	15.30	7.02**	1,72
Mathematics				
- concepts (28)	16.30	18.04	1.54	1,72
- problems (23)	10.74	12.39	1.77	1,72
- computation (39)	23.64	27.23	3.34	1,72
SCAMIN				
- motivation (120)	99.08	97.05	—	—
- self-concept (120)	87.76	87.10	—	—

^a "—" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis.

^b Maximum scores in parentheses

* $p < .05$

** $p < .01$

*** $p < .001$

Table 5

Comparison of Test Results of SED and NON-SED Groups in
Inner-City Schools According to School Profile
Grade 3

	SED ₂	NON-SED ₂	F ratio ^a	df
Non-verbal (36) ^b	27.43	28.10	—	—
English lang. skills				
- vocabulary (30)	18.67	20.19	0.85	1,71
- reading (44)	23.73	26.73	1.82	1,70
- spelling (30)	20.12	23.14	4.16*	1,72
- capitalization (28)	16.34	18.22	1.37	1,72
- punctuation (28)	12.10	13.61	1.23	1,72
- usage (27)	13.71	16.13	3.35	1,71
Mathematics				
- concepts (28)	18.23	18.86	0.17	1,73
- problems (23)	12.35	13.30	0.42	1,74
- computation (39)	26.06	28.00	0.58	1,70
SCAMIN				
- motivation (120)	99.63	103.00	—	—
- self-concept (120)	86.58	84.84	—	—

a * — indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis.

b Maximum scores in parentheses

* $p < .05$

Table 6
Comparison of Test Results of SED and NON-SED Groups in
Non-Inner City Schools According to School Profile
Grade 3

	SED ₃	NON-SED ₃	F ratio ^a	df
Non-verbal (36) ^b	27.12	26.96	—	—
English lang. skills				
- vocabulary (30)	17.70	20.67	5.43**	1,92
- reading (44)	19.31	24.33	10.82***	1,89
- spelling (30)	17.43	21.00	7.13**	1,95
- capitalization (28)	12.95	16.68	8.41**	1,95
- punctuation (28)	9.64	11.48	3.28	1,94
- usage (27)	11.09	13.00	2.46	1,92
Mathematics				
- concepts (28)	15.07	17.40	3.76*	1,91
- problems (23)	10.56	12.60	2.92	1,89
- computation (39)	23.32	27.65	7.56**	1,92
SCAMIN				
- motivation (120)	99.95	97.07	—	—
- self-concept (120)	86.59	94.85	—	—

a "—" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis.

b Maximum scores in parentheses

* $p < .05$
** $p < .01$

Table 7

Comparison of Grade Equivalent Scores on CTBS

According to School Profile

Grade 3

	Core Inner City		Inner City		Non-Inner City	
	SED ₁	NON-SED ₁	SED ₂	NON-SED ₂	SED ₃	NON-SED ₃
English lang. skills						
- vocabulary	32	38	35	36	33	37
- reading	32	38	35	37	31	36
- spelling	34	42	39	45	36	41
- capitalization	35	42	39	42	32	39
- punctuation	36	39	37	41	31	36
- usage	30	37	34	39	30	33
Mathematics						
- concepts	36	38	39	39	34	37
- problems	33	36	36	38	34	36
- computation	38	41	41	43	38	42

Table 8

Comparison of Stanline Scores on SCAMIN
According to School Profile

Grade 3

	Core Inner City		Inner City		Non-Inner City	
	SED ₁	NON-SED ₁	SED ₂	NON-SED ₂	SED ₃	NON-SED ₃
Motivation						
- goal & achievement needs	5	5	5	6	5	4
- achievement investment	5	5	6	7	6	6
Self-concept						
- role expectations	5	5	5	5	5	4
- self-adequacy	5	5	4	4	5	5

Table 9
Comparison of Test Results of SED Groups
According to SED Concentration^a
Grade 3

	SED ₁	SED ₂	SED ₃	F ratio	df
Non-verbal (36) ^b	27.78	27.20	27.88	—	—
English lang. skills					
- vocabulary (30)	12.90	17.80	18.16	3.25*	2,143
- reading (44)	16.60	22.44	19.55	3.81*	2,138
- spelling (30)	15.18	18.62	18.11	1.28	2,142
- capitalization (28)	10.55	15.30	13.93	3.23*	2,142
- punctuation (28)	9.91	11.68	10.48	1.28	2,142
- usage (27)	9.55	12.30	12.39	1.25	2,141
Mathematics					
- concepts (28)	15.18	17.27	15.56	1.50	2,144
- problems (23)	10.73	11.77	10.30	1.11	2,144
- computation (39)	19.67	24.84	24.39	1.39	2,142
SCAMIN					
- motivation (120)	98.09	99.29	99.97	0.43	2,137
- self-concept (120)	90.09	86.09	85.37	1.01	2,137

^a Means joined by a line differ significantly from one another

^b Maximum scores in parentheses

* $p < .05$

Table 10
Comparison of Test Results of SED and NON-SED Groups in
Inner City Schools According to SED Concentration
Grade 3

	SED ₂	NON-SED ₂	F ratio	df
Non-verbal (36) ^a	27.20	28.75	1.27	1,133
English lang. skills				
- vocabulary (30)	17.80	21.56	10.18**	1,130
- reading (44)	22.44	27.63	10.63***	1,129
- spelling (30)	18.62	22.14	7.84**	1,131
- capitalization (28)	15.30	17.74	4.28*	1,132
- punctuation (28)	11.67	13.35	2.86	1,132
- usage (27)	12.30	15.98	12.46***	1,131
Mathematics				
- concepts (28)	17.27	18.31	0.88	1,133
- problems (23)	11.77	13.02	1.44	1,134
- computation (39)	24.84	26.92	1.12	1,130
SCAMIN				
- motivation (120)	99.29	98.95	0.04	1,125
- self-concept (120)	86.09	85.78	0.03	1,125

^a Maximum scores in parentheses

* $p < .05$

** $p < .01$

*** $p < .001$

Table 11

Comparison of Test Results of SED and NON-SED Groups in
Non-Lower City Schools According to SED Concentration
Grade 3

	SED ₃	NON-SED ₃	F ratio	df
Non-verbal (36)*	27.88	26.75	1.35	1,94
English lang. skills				
- vocabulary (30)	18.16	19.60	1.42	1,95
- reading (44)	19.55	23.53	7.40**	1,92
- spelling (30)	18.11	20.89	4.75*	1,96
- capitalization (28)	13.93	17.77	9.00**	1,95
- punctuation (28)	10.48	11.67	1.39	1,94
- usage (27)	12.39	12.92	0.19	1,94
Mathematics				
- concepts (28)	15.57	17.65	2.96	1,92
- problems (23)	10.30	12.49	3.61	1,90
- computation (39)	24.39	28.52	8.18**	1,95
SCAMIN				
- motivation (120)	99.97	98.04	1.42	1,89
- self-concept (120)	85.37	85.38	0.00	1,89

* Maximum scores in parentheses

* p < .05

** p < .01

Table 12

Comparison of Grade Equivalent Scores on CTBS
According to SED Concentration

Grade 3

	80% - 100% SED		55% - 79% SED		Less than 55% SED	
	SED ₁	NON-SED ₁	SED ₂	NON-SED ₂	SED ₃	NON-SED ₃
English lang. skills						
- vocabulary	28	NA	34	39	34	35
- reading	28	NA	34	39	31	35
- spelling	31	NA	37	43	36	41
- capitalization	29	NA	37	41	34	40
- punctuation	32	NA	36	40	33	36
- usage	27	NA	32	38	32	33
Mathematics						
- concepts	34	NA	38	38	35	37
- problems	33	NA	35	37	33	36
- computation	35	NA	40	42	39	43

NA = Not Applicable (there was only one pupil in this group)

Table 13

Comparison of Stanine Scores on SCANIN
According to SED Concentration

Grade 3

	80% - 100% SED		55% - 79% SED		Less than 55% SED	
	SED ₁	NON-SED ₁	SED ₂	NON-SED ₂	SED ₃	NON-SED ₃
Motivation						
- goal & achievement needs	5	NA	5	5	5	5
- achievement investment	5	NA	6	6	6	6
Self-concept						
- role expectations	6	NA	5	5	5	4
- self-adequacy	5	NA	5	4	5	5

NA = Not Applicable (there was only one pupil in this group)

Table 14A

Sample Sizes for Grade 6 According to
School Profile

Core Inner City Schools	SED ₁	48
	NON-SED ₁	22
Inner City Schools	SED ₂	53
	NON-SED ₂	31
Non-Inner City Schools	SED ₃	32
	NON-SED ₃	73

Table 14B

Sample Sizes for Grade 6 According to
SED Concentration

80% - 100% SED	SED ₁	50
	NON-SED ₁	6
55% - 79% SED	SED ₂	29
	NON-SED ₂	20
Below 55% SED	SED ₃	54
	NON-SED ₃	100

Table 15
F Ratios for Two-Way Analyses of Grade 6
Test Results According to School Profile

	School Profile	SED/NON-SED	Interaction
Non-verbal (48) ^a	3.05	1.15	0.95
English lang. skills			
- vocabulary (42)	6.52**	0.91	0.82
- reading (56)	2.86	3.49*	0.25
- spelling (42)	2.66	0.70	1.68
- capitalization (30)	6.93***	4.64*	0.22
- punctuation (30)	4.25**	3.53*	0.63
- usage (30)	1.88	0.56	2.49
Mathematics			
- concepts (40)	2.63	4.15*	2.54
- problems (29)	2.09	2.31	2.57
- computation (45)	5.62*	6.18**	0.02
SCAMIN			
- motivation (120)	3.83*	1.89	0.13
- self-concept (120)	4.23	1.87	0.90

^a Maximum scores in parentheses

* $p < .05$

** $p < .01$

*** $p < .001$

Table 16
Comparison of Test Results of SED Groups
According to School Profiles^a
Grade 6

	SED ₁	SED ₂	SED ₃	F ratio ^b	df
Non-verbal (48) ^c	37.54	38.88	36.81	—	—
English lang. skills					
- vocabulary (42)	25.32	25.42	28.10	1.61	2,118
- reading (56)	25.60	28.72	28.23	1.34	2,125
- spelling (42)	25.07	25.72	25.55	—	—
- capitalization (30)	15.09	16.78	16.77	1.56	2,124
- punctuation (30)	15.42	17.20	16.60	1.25	2,124
- usage (30)	16.43	18.02	16.72	—	—
Mathematics					
- concepts (40)	21.78	23.69	22.77	—	—
- problems (29)	12.59	14.58	13.30	—	—
- computation (45)	26.89	27.15	30.10	1.64	2,119
SCAMIN					
- motivation (120)	97.02	93.65	95.33	4.21*	2,119
- self-concept (120)	82.43	79.85	80.89	—	—

^a Means joined by a line differ significantly from one another

^b "—" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis.

^c Maximum scores in parentheses

* $p < .05$

Table 17

Comparison of Test Results of SED and NON-SED Groups in
Core Inner City Schools According to School Profile
Grade 6

	SED ₁	NON-SED ₁	F ratio ^a	df
Non-verbal (48) ^b	37.54	38.68	—	—
English lang. skills				
- vocabulary (42)	25.32	28.73	—	—
- reading (56)	25.60	29.88	3.67*	1,66
- spelling (42)	25.07	27.15	—	—
- capitalization (30)	15.09	16.14	0.56	1,67
- punctuation (30)	15.42	16.48	0.48	1,67
- usage (30)	16.43	18.67	—	—
Mathematics				
- concepts (40)	21.78	26.47	7.13**	1,66
- problems (29)	12.59	15.67	—	—
- computation (45)	26.89	30.52	3.88*	1,65
SCAMIN				
- motivation (120)	97.02	95.33	—	—
- self-concept (120)	82.43	82.90	—	—

a "—" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis.

b Maximum scores in parentheses

* $p < .05$

** $p < .01$

Table 19

Comparison of Test Results of SED and NON-SED Groups in
Inner City Schools According to School Profile
Grade 6

	SED ₂	NON-SED ₂	F ratio ^a	df
Non-verbal (48) ^b	38.38	39.10	—	—
English lang. skills				
- vocabulary (42)	25.42	25.00	—	—
- reading (56)	28.72	26.53	2.53	1.78
- spelling (42)	25.72	25.07	—	—
- capitalization (30)	16.78	18.64	1.54	1.79
- punctuation (30)	17.20	18.36	0.66	1.79
- usage (30)	18.02	16.57	—	—
Mathematics				
- concepts (40)	23.69	23.07	0.19	1.79
- problems (29)	14.58	13.59	—	—
- computation (45)	27.15	30.30	2.79	1.77
SCAMIN				
- motivation (120)	93.65	92.62	—	—
- self-concept (120)	79.85	76.16	—	—

a "—" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis.

b Maximum scores in parentheses

Table 19

Comparison of Test Results of SED and NON-SED Groups in
Non-Inner City Schools According to School Profile
Grade 6

	SED _j	NON-SED _j	F ratio ^a	df
Non-verbal (48) ^b	36.81	38.24	—	—
English lang. skills				
- vocabulary (42)	28.10	30.11	—	—
- reading (56)	28.32	32.21	5.80*	1,98
- spelling (42)	25.55	29.87	—	—
- capitalization (30)	16.77	19.40	5.24*	1,98
- punctuation (30)	16.60	19.51	6.20**	1,98
- usage (30)	16.72	19.19	—	—
Mathematics				
- concepts (40)	22.77	25.95	5.38*	1,98
- problems (29)	13.30	16.25	—	—
- computation (45)	30.10	32.89	7.24**	1,98
SCAMIN				
- motivation (12)	95.13	95.81	—	—
- self-concept (120)	80.89	78.43	—	—

^a "—" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis.

^b Maximum scores in parentheses

* $p < .05$

** $p < .01$

Table 20

Comparison of Grade Equivalent Scores on CTBS
According to School Profile

Grade 6

	Core Inner City		Inner City		Non-Inner City	
	SED ₁	NON-SED ₁	SED ₂	NON-SED ₂	SED ₃	NON-SED ₃
English lang. skills						
- vocabulary	61	66	60	61	63	68
- reading	58	63	62	59	61	66
- spelling	63	66	64	63	63	69
- capitalization	58	61	63	67	63	69
- punctuation	62	65	67	69	65	72
- usage	58	62	61	57	58	64
Mathematics						
- concepts	65	73	69	68	67	72
- problems	57	63	61	59	58	64
- computation	67	72	67	71	71	75

Table 21
Comparison of Stanine Scores on SCAMIN
According to School Profile
Grade 6

	Core Inner City		Inner City		Non-Inner City	
	SED ₁	NON-SED ₁	SED ₂	NON-SED ₂	SED ₃	NON-SED ₃
Motivation						
- goal & achievement needs	5	4	4	4	5	4
- achievement investment	5	5	5	5	5	5
Self-concept						
- role expectations	5	5	4	3	5	4
- self-adequacy	6	5	5	5	6	5

Table 22
F Ratios for Two-Way Analyses of Grade 6
Test Results According to SED Concentration

	SED Concentration	SED/NON-SED	Interaction
Non-verbal (48) ^a	0.18	0.10	0.95
English lang. skills			
- vocabulary (42)	4.95**	2.61	0.08
- reading (56)	3.62*	4.19*	1.38
- spelling (42)	4.16*	4.22*	0.88
- capitalization (30)	1.27	7.93**	2.24
- punctuation (30)	2.25	11.07***	1.72
- usage (30)	1.48	1.15	2.31
Mathematics			
- concepts (40)	1.67	8.46**	1.39
- problems (29)	3.49*	7.34**	1.71
- computation (45)	3.02*	18.25***	1.32
SCAMIN			
- motivation (120)	1.48	0.01	1.37
- self-concept (120)	1.12	0.31	0.72

^a Maximum scores in parentheses

* p < .05

** p < .01

*** p < .001

Table 23
Comparison of Test Results of SED Groups
According to SED Concentration
Grade 6

	SED ₁	SED ₂	SED ₃	F ratio ^b	df
Non-verbal (48) ^b	38.32	38.13	36.75	—	—
English Lang. Skills					
- vocabulary (42)	25.89	22.83	27.51	2.55	2,119
- reading (56)	28.08	26.00	27.64	0.39	2,125
- spelling (42)	25.90	23.15	26.33	1.21	2,124
- capitalization (30)	15.74	16.50	16.37	—	—
- punctuation (30)	16.62	16.27	16.31	—	—
- usage (30)	17.02	17.67	17.39	—	—
Mathematics					
- concepts (40)	23.01	22.81	22.16	—	—
- problems (29)	14.58	13.32	12.67	1.61	2,126
- computation (45)	24.60	28.41	28.76	2.47	2,119
SCAMIN					
- motivation (120)	95.63	95.26	97.04	—	—
- self-concept (120)	80.35	79.93	82.10	—	—

a "—" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis.

b Maximum scores in parentheses

Table 24

Comparison of Test Results of SED and NON-SED Groups in
Core Inner City Schools According to SED Concentration
Grade 6

	SED ₁	NON-SED ₁	F ratio ^a	df
Non-verbal (48) ^b	38.32	40.33	—	—
English lang. skills				
- vocabulary (42)	25.89	29.33	—	—
- reading (56)	28.08	33.83	5.07*	1,55
- spelling (42)	25.90	32.83	3.06	1,55
- capitalization (30)	15.74	21.50	5.20*	1,55
- punctuation (30)	16.62	22.83	7.02**	1,55
- usage (30)	17.02	15.75	—	—
Mathematics				
- concepts (40)	23.01	29.67	5.15*	1,55
- problems (29)	14.58	19.83	3.92*	1,55
- computation (45)	24.60	31.21	24.50***	1,51
SCAMIN				
- motivation (120)	95.63	99.84	—	—
- self-concept (120)	80.35	82.17	—	—

a "—" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis.

b Maximum scores in parentheses

* $p < .05$

** $p < .01$

*** $p < .001$

Table 25

Comparison of Test Results of SED and NON-SED Groups in
Inner City Schools According to SED Concentration
Grade 6

	SED ₂	NON-SED ₂	F ratio ^a	df
Non-verbal (48) ^b	38.13	39.26	—	—
English lang. skills				
- vocabulary (42)	22.83	24.95	—	—
- reading (56)	26.00	24.67	2.93	1,46
- spelling (42)	23.15	24.05	0.12	1,44
- capitalization (30)	16.50	16.53	0.04	1,44
- punctuation (30)	16.27	17.53	0.77	1,44
- usage (30)	17.67	20.83	—	—
Mathematics				
- concepts (40)	22.81	23.66	0.13	1,44
- problems (29)	13.32	13.50	0.01	1,45
- computation (45)	28.41	36.83	8.35**	1,43
SCAMIN				
- motivation (120)	95.26	99.83	—	—
- self-concept (120)	79.93	76.79	—	—

^a "—" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis.

^b Maximum scores in parentheses

** $p < .01$

Table 26

Comparison of Test Results of SED and NON-SED Groups in
Non-Inner City Schools According to SED Concentration
Grade 6

	SED ₃	NON-SED ₃	F ratio ^a	df
Non-verbal (48) ^b	36.75	38.28	—	—
English lang. skills				
- vocabulary (42)	27.51	29.41	—	—
- reading (56)	27.63	31.40	6.14*	1,144
- spelling (42)	26.33	28.50	2.07	1,144
- capitalization (30)	16.38	18.66	6.81**	1,145
- punctuation (30)	16.33	18.51	5.62*	1,145
- usage (30)	17.39	18.81	—	—
Mathematics				
- concepts (40)	22.16	25.39	7.34**	1,144
- problems (29)	12.67	15.65	9.36**	1,144
- computation (45)	28.77	32.27	7.34**	1,146
SCAMIN				
- motivation (120)	97.04	94.87	—	—
- self-concept (120)	82.10	78.89	—	—

a "—" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis.

b Maximum scores in parentheses

* $p < .05$
 ** $p < .01$
 *** $p < .001$

Table 27

Comparison of Grade Equivalent Scores on CTBS
According to SED Concentration

Grade 6

	80% - 100% SED		55% - 79% SED		Less than 55% SED	
	SED ₁	NON-SED ₁	SED ₂	NON-SED ₂	SED ₃	NON-SED ₃
English lang. skills						
- vocabulary	62	67	57	60	63	67
- reading	61	68	59	57	61	65
- spelling	64	75	61	63	65	68
- capitalization	60	75	62	62	62	67
- punctuation	65	80	65	68	64	70
- usage	59	67	60	56	59	63
Mathematics						
- concepts	68	79	67	69	66	71
- problems	61	71	59	59	58	63
- computation	69	79	64	73	69	74

Table 28
Comparison of Final Scores on SCAMIN
According to (f) Concentration

	80% - 100% SED		55% - 79% SED		Less than 55% SED	
	SED ₁	NON-SED ₁	SED ₂	NON-SED ₂	SED ₃	NON-SED ₃
Motivation						
- goal & achievement needs	4	6	4	4	5	4
- achievement investment	5	5	5	5	5	5
Self-concept						
- role expectations	4	5	5	3	5	4
- self-adequacy	5	6	5	5	6	5

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Table 29

Sample Sizes for the Comparison of the
Test Results from 1985 and 1987

Grades 1 & 3

Core Inner City Schools	SED ₁	25
	NON-SED ₁	15
Inner City Schools	SED ₂	53
	NON-SED ₂	13
Non-Inner City Schools	SED ₃	33
	NON-SED ₃	35

Grades 4 & 5

Core Inner City Schools	SED ₁	37
	NON-SED ₁	13
Inner City Schools	SED ₂	36
	NON-SED ₂	25
Non-Inner City Schools	SED ₃	21
	NON-SED ₃	46

Table 90

Comparison of the 1965-1967 Seed Results*

Grades 1 & 2

	1965-1967 Seed				1965-1967 Seed				1965-1967 Seed			
	1965		1966		1965		1966		1965		1966	
	kg/ha	gr/ha	kg/ha	gr/ha	kg/ha	gr/ha	kg/ha	gr/ha	kg/ha	gr/ha	kg/ha	gr/ha

Avg. 1965-1967

- 1965
 - 1966
 - 1967
 - 1968

National 1967

- 1965
 - 1966
 - 1967
 - 1968

1967

- 1965
 - 1966
 - 1967

* Figures shown are calculated as a percentage of the maximum values of each grade seed.

Table 31
Comparison of the 1985-1987 Test Results^a
Grades A & B

	1985-1986 C119				1986-1987 C119				1985-1987 C119			
	80% - 85%		85% - 90%		80% - 85%		85% - 90%		80% - 85%		85% - 90%	
	90% A	90% B	90% A	90% B	90% A	90% B	90% A	90% B	90% A	90% B	90% A	90% B
1985-1986, 1987												
- ventilation	62	60	65	68	59	60	62	65	64	65	70	72
- tracking	47	46	52	55	45	55	49	52	45	50	55	58
- signaling	60	60	70	65	64	65	65	69	62	65	72	75
- mechanical tests	56	50	65	54	65	56	68	65	60	56	65	68
- perfect test run	45	52	54	55	52	52	56	65	40	55	54	65
- average	55	56	65	62	56	62	60	65	56	56	65	64
1986-1987												
- ventilation	55	54	65	66	54	59	65	68	52	55	68	65
- tracking	47	45	58	54	49	55	52	65	45	45	52	56
- signaling	60	60	64	60	55	60	54	65	64	62	68	75
1985-1987												
- ventilation	65	65	68	70	65	68	65	75	62	62	65	68
- tracking	55	55	54	55	65	64	52	64	55	64	68	65

^a Values shown are calculated as a percentage of the maximum values of each grade tested.

Table 32

Sample Sizes for the Grade 3 Classes¹
in the Four Schools of the Lakeshore School Board

SED	25
NON-SED	139

* A total of 9 classes were included in the study.

Table 33

Comparison of SED and NON-SED Groups in
the Four Schools of the Lakeshore School Board

	SED	NON-SED	F ratio	df
Non-verbal (36) ^A	27.17	25.35	2.83	1,206
English lang. skills				
- vocabulary (30)	20.52	21.95	1.48	1,208
- reading (44)	24.75	27.23	1.57	1,199
- spelling (30)	19.83	20.57	0.29	1,205
- capitalization (28)	13.96	15.65	1.54	1,204
- punctuation (28)	15.48	14.47	0.32	1,203
- usage (27)	15.87	17.10	1.01	1,203
Mathematics				
- concepts (28)	17.58	18.80	1.03	1,203
- problems (23)	14.43	14.06	0.10	1,202
- computation (39)	24.76	24.39	0.05	1,211
SCAMIV				
- motivation (120)	95.68	98.29	2.27	1,203
- self-concept (120)	83.40	84.64	0.37	1,203

^A Maximum scores in parentheses

Table 34

Comparison of Grade Equivalent Scores on CTBS
in the Four Schools of the Lakeshore School Board

	SED	NON-SED
English lang. skills		
- vocabulary	38	40
- reading	35	39
- spelling	39	40
- capitalization	35	38
- punctuation	39	39
- usage	39	41
Mathematics		
- concepts	38	39
- problems	40	39
- computation	39	39

Table 35

Comparison of Stanine Scores on SCAMIN
in the Four Schools of the Lakeshore School Board

	SED	NON-SED
Motivation		
- goal & achievement needs	4	5
- achievement investment	5	6
Self-concept		
- role expectations	4	4
- self-adequacy	4	5

Table 36
Comparison of 1986 & 1987 Test Results in
the Four Schools of the Lakeshore School Board^a
Grades 2 & 3

	SED		NON-SED	
	Gr. 2	Gr. 3	Gr. 2	Gr. 3
English lang. skills				
- vocabulary	55	68	62	73
- reading	71	56	74	62
- spelling	66	66	70	69
- usage	66	59	68	63
Mathematics				
- concepts	57	63	57	67
- problems	65	63	64	61
- computation	79	64	78	63
SCAMIN				
- motivation	84	30	83	82
- self-concept	74	70	74	71

^a Means shown are calculated as a percentage of the maximum scores at each grade level

Appendix I

Explanation of Analysis of Covariance

Analysis of covariance is a statistical procedure which is similar to the analysis of variance in that it is used to compare the results of two or more groups on a particular test. At the same time, analysis of covariance mathematically reduces the influence that another variable, such as I.Q., might have on the test results. For example, if two hypothetical language groups under investigation differ a priori in terms of I.Q., and if it is believed that I.Q. will significantly influence performance on the test being administered (e.g., a reading test), then an analysis of covariance will estimate the significance of the language factor. This mathematical procedure is used when it is difficult or impossible to select groups which are equivalent in I.Q.

Appendix II

Explanation of Grade Equivalents

The grade equivalent of a given raw score on any test indicates the grade level at which the typical pupil makes this raw score. In each score, the first digit represents the grade and the second digit the month within the grade in which the typical pupil makes the corresponding raw score. Strictly speaking, the second digit represents tenths of a year's difference between grade medians for successive years. For example, if a pupil makes a grade equivalent of 57, this means that the raw score on the test is the same as that made by the typical or median pupil in grade five at the end of the seventh month.

The grade equivalent of an entire group is a mean based on the individual grade equivalents of all the students in that group.

Appendix III

Interpretation of Stanine Scores

Stanine

The stanine scale is a simple nine-point scale of standard scores. (The word stanine was derived from STANDARD NINE-Point scale). In this scale, raw scores are converted to scores which range from 1 (low) to 9 (high) with a mean of 5 and a standard deviation of 2.

Figure 1. Percentage of Cases at Each Stanine Level

Meaning of Stanines

STA: Standard Score; NINE: Nine Step Scale



